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COMPUTERWORLD

RE-ENGINEERING TEAM OF THE YEAR

Back from the brink



Bob Peckham

Coming Asahi Video Products unit was floundering before a 15-month re-engineering effort transformed its haphazard handling and fulfillment processes. It slashed per-order costs by 75% and eliminated error/overrun costs of $1.6 million.

See Management, page 80

Access ups desktop fight

April database release boosts performance, ease of use

By Michael Vizard
and Stuart J. Johnston

Microsoft Corp. is expected to escalate the already highly competitive PC database wars when it begins shipping the next release of Access in April.

Access 2.0 will include better integration with its SQL Server database, a speed search engine borrowed from FoxPro and a substantially larger number of Wizards designed to make the PC database easier to use, sources said. The update is aimed at shoring up Microsoft's dominant position in the end-user database arena.

Over the past several months, Lotus Development Corp. has been successfully pushing Approach as an end-user database, while Borland International, Inc. has been gearing up to offer a low-end version of its Paradox database, which is also aimed at end users.

Although end users have employed PC databases for some time, Microsoft substantially enlarged the market when it began touting Access as an end-user query tool in 1992. After Microsoft shipped more than 1 million units of Access, Lotus acquired the Approach database in response last year.

"Microsoft created demand for an end-user data management product above what you would need in an Excel spreadsheet. Since then, other [database vendors] have benefited

Access, page 20

Clashing Titans

Microsoft's entry into the PC database market helped jump-start overall market sales. Paradox was Borland's flagship in 1993.

Manufacturer	Model	1991	1992	1993
		Units shipped in thousands		
Microsoft Corp.	FoxPro	82.5	111	411.7
	Access	[illegible]	197.8	788.8
Borland International, Inc.	Paradox	121.9	200.2	851.9
	[illegible]	[illegible]	211.8	381.3

Source: Computer Intelligence/InfoCorp, Santa Clara, Calif.

Fast 486/DX4 may stunt low-end Pentium sales

By Michael Fitzgerald

■ Intel Corp.'s zeal to fill all niches in the microprocessor market may soon put the company in the embarrassing position of having a 486 chip that outperforms its more expensive Pentium. This is expected to stall Pentium-based PC sales until the second half of the year, when the next generation of Pentiums hits the market.

The situation stems from the Intel DX4, a clock-tripling 486 expected to appear in systems by late March [CW, Jan. 10]. DX4 "puts Pentium to shame," confirmed one DX4 beta tester, a PC manager who asked not to be named. The manager is testing an unannounced NEC Technologies, Inc. DX4-based Image 486ES.

"It's the fastest system I've seen," the beta tester said. He has Pentium systems in-house already but said he will probably buy the DX4 when it becomes available.

Price is right

Configured with a 550M-byte hard drive, an onboard 512K-byte cache and 32-bit video drivers from Western Digital Corp., the NEC DX4-based machine will sell for less than $2,000, the beta tester said. NEC refused to confirm details, but a spokesman said the company would "be stupid not to be working on a DX4 box."

Sean Burke, director of product marketing and planning at Dell

Fast 486/DX4, page 16

IBM pins hopes on a la carte OS/2

By Ed Scannell
AUSTIN, TEXAS

Multiple versions of OS/2 could confuse customers, analysts said

In hopes of gaining OS/2 the broader appeal it sorely needs, IBM intends to concentrate on repackaging OS/2 to focus on several market opportunities this year.

By year's end, IBM's Personal Software Products unit will produce three versions of the operating system in a bid to make OS/2 more competitive in the portable, desktop and server markets, according to company officials at a briefing here last week. The three versions will include the following features:

- A long-overdue, entry-level version capable of running comfortably in 4M bytes of memory. This will target portable systems and low-end desktop systems.
- A souped-up client version that improves on OS/2 2.1 by offering such capabilities as built-in peer-to-peer networking and hooks for handling connections to a variety of host-based products such as LAN Server (see story page 14).
- A version for servers that will support the Distributed Computing Environment. It will be bundled with IBM's LAN Server, NetView and LAN Distance products and is likely to go head-to-head with Microsoft Corp.'s Windows NT.
- A previously discussed portable version of OS/2, anchored by IBM's version of the Mach microkernel, that will target the PowerPC and then the Intel Corp. platform.

All told, about 90 new features

IBM, page 15

Rebuilding IBM

Gerstner vows better service, lower prices

By Johanna Ambrosio
NEW YORK

Under the direction of Chairman Louis V. Gerstner, a recharged IBM will work during 1994 to improve service while continuing to lower mainframe prices and bring down costs.

As for the oft-criticized "vision thing," Gerstner made clear during a 75-minute interview with *Computerworld* last week that IBM's actions, via a string of product line strategy rollouts, will speak louder than any articulated grand vision could.

Gerstner was roundly criticized in some quarters for his July 1993 statement, made during a press conference to announce

Gerstner, page 14



IBM Chairman Louis V. Gerstner: *'Nobody's a visionary until they succeed'*

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CW GUIDE TO SPREADSHEETS

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Executive Briefing

Hoping for stabilization at IBM? Don't bold your breatb. Company cbairman Louis V. Gerstner isn't interested in fostering stability. "I want the company to always feel insecure, hungry — somebody breathing down our neck. Stable to me means complacent, and I don't think you can be stable." *Page 1*

ATM on trial. A number of companies, including Connecticut-based **Northeast Utilities** and New York brokerage firm, **Bear Stearns**, are currently conducting tests of ATM networking. One of the most ambitious experimenters is **Amoco**, which has built a scale model of its international network to serve as a testbed for products from 13 vendors. *Page 12*

Mining fever. Some companies have been using proprietary technology for years to sift for patterns and key information in huge customer databases. Interest in **"data mining"** is growing rapidly. One reason is mainstream commercial vendors have gotten into the act. Another is that **scalable/parallel servers** and **cluster technology** promise a more cost-effective route. *Pages 6 and 65.*

Check local grocer for details. A plan by **American Stores** to consolidate its three data centers is indicative of a larger trend in the grocery industry. Chains typically collect huge amounts of point-of-sale data on central mainframes, but many now leave much of this data in smaller databases closer to the store level. *Page 26*

Holes in hospital systems. Your hospital may have every detail of your insurance coverage tucked away in a database, but chances are it knows very little about the prescription drugs its pharmacy hands out. A recent study of 166 hospital pharmacy databases found that only 8% could provide the name of a drug's vendor, and only 3% had the lot number. *Page 68*

Documentation overkill. David Lee Russell, MIS director at Springs Window Fashions, says overdocumentation is rampant. Probably 80% of the documentation on your shelf is useless, and much is there only because IS managers have bought the specious argument that extensive documentation is a necessity. *Page 35*

IS by any other name. No openings in IS? Check out the business departments. Some are hiring systems types under other titles. *Page 111*

Getting a good system deal takes time and strong nerves. Joe Auer, president of International Computer Negotiations, Inc. in Winter Park, Fla., says you have to be willing to to push vendors on price and terms to the point of deadlock, if necessary. And you have to allow enough time for back and forthing. "When you attempt to negotiate at the last minute, it's called begging," Auer says. *Page 122*

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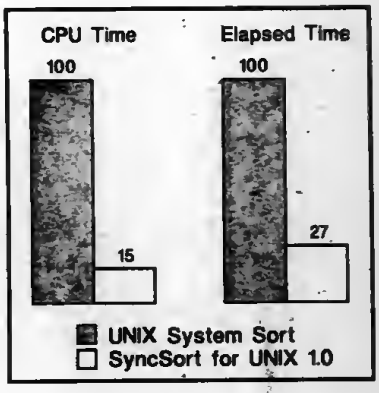
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Bulked-up NetWare 4.1 remains keystone

By Elisabeth Horwitt
PARK CITY, UTAH

■ Novell, Inc. last week made it clear that despite plans to extend its global directory and other network services to other platforms, NetWare will remain the keystone of its competitive strategy and the base from which it hopes to conquer the emerging enterprise services market.

Reinforcing that stance are a slew of enhancements and new capabilities that will ship with NetWare Version 4.1 by midyear. Slated for demonstration at Novell's Brainshare developers conference in March, NetWare 4.1 will remedy the majority of functional gaps and limitations, particularly in the NetWare Directory Service (NDS), that have dissuaded many users from implementing NetWare 4.01, Novell executives said.

Version 4.1's enhancements will include the following:

▶ Integration of NDS with Novell's Global Message Handling System. This is a major step toward enabling client applications and users to access enterprise services through a single, NDS-based log-on.

▶ NDS support for database servers from industry leaders such as Oracle Corp. by midyear. Backup products from companies such as Cheyenne Software, Inc. in Roslyn, N.Y., are also in the offing.

▶ Support for many additional NetWare-based resources, including the Macintosh and communication gateways, such as NetWare for IBM's Systems Application Architecture and NetWare Connect. Integration of NDS with Banyan Systems, Inc.'s Vines in 1994 is possible.

▶ Management of NetWare 3.x server resources via NDS.

Novell spokesmen expressed confidence that, with the help of such improvements, NetWare 4.x should start climbing a steep shipment curve toward the second half of this year. Novell expects NetWare 4.x to make up 50% of total NetWare sales by year's end and 50% of total NetWare installations in one to two years.

Time to move

Several users confirmed that the 4.1 enhancements are just what they have been waiting for to migrate to the enterprise-based network operating system.

For David Russo, a network manager at the Massachusetts Automotive Registry, the key development will be promised tools to move from the server-centric NetWare 3.x to a global directory service. For Robin McCubbin, a network planning analyst at National Grocers Co., broader support from third-party applications and backup systems is crucial.

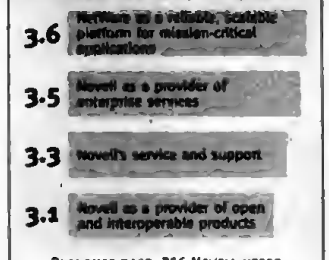
"NetWare 4.01 looks like a really powerful, neat operating system, and we're using it heavily already. But they need to get it working correctly," said Stephen Smalley, a senior network administrator at Randall's Food Markets, Inc., a Houston-based supermarket chain.

Smalley said he would also like to see better integration between NDS and the Global Message Handling System, as well as NetWare v3.11.

Novell last week promised integration between NDS and NetWare Management Services (NMS) within the next few months, enabling NMS to track and access network server and client resources registered on NDS. NetWare System Fault Tolerance Level III will ship in the same time frame as NetWare 4.1, said Richard King, executive vice president of NetWare Systems Group.

NET RESULTS

How Novell stacks up in key areas



RESPONSE BASE: 216 NOVELL USERS
SCALE: 1 TO 5, WHERE 5 IS VERY GOOD

Source: *Computerworld* Database Division

Across-the-board integration

Novell executives last week reinforced plans to position UnixWare as an application server adjunct to NetWare, by promising an increasingly tight level of integration between NetWare, NDS and UnixWare applications and resources.

Toward that end, users can look forward to a series of supporting announcements in the next two years, including the following:

▶ By year's end, implementation of NetWare print and file services on UnixWare, integration of UnixWare applications and resources with NDS and an Intel Corp. Pentium implementation of UnixWare. The latter will enable sites with limited hardware budgets to implement NetWare and UnixWare on the same server.

▶ Common application programming interfaces for back-end services running on the two platforms, delivered in the next year to 18 months.

▶ Management of UnixWare by NMS before 1995.

▶ Implementation of Novell's Open Driver Interface on UnixWare, extending the range of supported adapters. — *Elisabeth Horwitt*

Unix Notes, distributed services on tap

By Michael Vizard

As Lotus Development Corp. struggles to put the finishing touches on the first Unix implementation of Notes, it is also working to expand the number of Unix-based distributed computing services available for Notes.

Already several months late because of Lotus' attempts to improve the reliability of its Unix port of Notes, the first Unix version is generally expected to arrive on Solaris 1.1 systems from Sun Microsystems, Inc. by the end of this month.

At that time, Lotus will also announce support for Sun's Distributed Object Environment (DOE) to link Notes servers efficiently over a wide-area network using TCP/IP. When DOE becomes generally available, Lotus will be able to use its services to exchange updates across Notes databases that make use of an object store.

Lotus product manager Antonio Parham said Lotus was working to determine the final ship date of a Notes version for Solaris 1.1. Notes resellers, meanwhile, cautioned that any more delays could have a cascading effect on Lotus' ship schedules for other Unix implementations and Notes 4.0. Other Unix implementations of Notes are due to follow every 30 days, and Notes 4.0 is expected to arrive by year's end.

"If we don't see Notes for Unix by the first of March, so goes the rest of the schedule. And you can probably kiss [Notes 4.0] good-bye until next year," said Norman Weizer, president of Weizer Associates, Inc. in Lexington, Mass.

For Lotus, Unix platforms that support robust distributed services such as DOE will be an essential part of its drive to push Notes 3.0 beyond the pilot projects that typify most Notes installations. Many large Fortune 1,000 companies have completed their pilot projects for Notes but are waiting for Unix support in order to take advantage of RISC servers.

Most Notes sites moving to enterprisewide solutions will use the Unix version of Notes as hubs in their distributed architecture based on TCP/IP. Many of these hubs will then be connected to local servers running OS/2 or Novell, Inc. NetWare Loadable Modules (NLM). NLM support is due in February.

"1994 will be the year of enterprise rollout for Notes," said Leon Alexandrou, senior systems engineer at Synetics Corp. in Wakefield, Mass.

Parham said Lotus is still working on some issues concerning Notes reliability on a Unix platform, which will be a critical factor for sites moving to enterprisewide implementations of Notes.

"Notes pilots are deceptively easy to implement, but enterprisewide Notes needs system planning. You have to make sure you have a reliable server. You need to treat Notes as a single distributed system, which has to be treated no different than how you would treat a mainframe. Instead of having one big piece, you have a lot of little pieces," Alexandrou said.

Patricia Seybold says that Notes' time has come. See column page 35.

Taking notice

These five Lotus Notes sites represent roughly 20% of the worldwide Notes installed base totaling more than 500,000 units

COMPANIES	UNITS
PRICE WATERHOUSE	30,000+
[illegible]	25,000+
*IBM	25,000+
[illegible]	20,000+
NYNEX CORP.	13,000+
TOTAL	113,000+

*IBM resells Notes

Lotus, take Note

As Lotus sites begin to roll out Notes 3.0 into enterprisewide environments that tend to make use of large databases, some performance issues have cropped up on large Notes databases.

"I've got one client where it's taking 40 seconds to open and close a view with a database that has 10,000 records. Somebody has taken their eye off a very important ball," said Norman Weizer, president of Weizer Associates, Inc.

Lotus said it is aware of the issue and pointed to work on Notes 4.0. The company plans to release studies on how to optimize servers.

Information systems managers need to be aware of how many users are attached to a particular server, the number of views being opened and the type of data stored in those databases because Notes is a compound document architecture supporting different types of data, according to Lotus product marketing manager John Bartlett.

Lotus will improve the scalability of Notes' performance in Notes 4.0 toward the end of the year. Later this year, it plans to make available more performance data to help sites optimize Notes server performance, he added.

— *Michael Vizard*



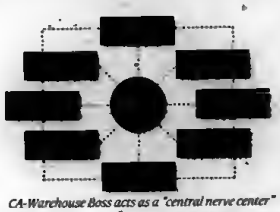
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Parallel processing at group level

The onslaught of powerful PCs continues unabated'—an estimated 12 million to 13 million more landed on U.S. desktops in 1993—and they continuo to spur a ferocious end-user appetite for data, networking and visual/image applications.

This desktop demand is likely to givo rise to an expanded layer of computing immediately above workgroups and departmental PCs. The bare bones of such a layer already exist in file/print servers or departmental application servers, but I believe this stratum will soon be more richly populated with servers handling small groups of PCs.

By the year 2000 there is likely to be nne server, costing no more than 10 times the price of a single PC, for every 10 PCs. Each server will handle data administration, applications and multiprotocol networking and, unlike the sequential host, will almost certainly be a massively parallel processing machine built with low-cost components.

Several authorities say they believe the industry is poised for parallel processing breakthroughs. IBM's commitment to MPP in November, along with heavy investments in MPP by Oracle and Intel, lays the groundwork for rapid gains in moving this technology into general-purpose environments.



As key applications move to the desktop, parallel processing servers become inevitable.

Charles Babcock

Indeed, some market observers are trimming their time estimates substantially. A short while ago, Bill Hogan, former general manager at MasPar Computer Corp. and now a consultant at RCI Ltd., a high-performance market research firm in Minneapolis, predicted the migration of major business applications to parallel processors within five years. He has now cut that estimate to three years.

Hogan notes that many emerging applications are, in high-performance parlance, "embarrassingly parallel." That is, they run so efficiently on a parallel processor that given a choice no one would run them sequentially. A credit card company that wants to search its customer base for a particular spending pattern is looking at an essentially parallel problem, he says.

To gauge the proximity of commercial parallel processing, watch for the following:

- **Reductions in latency or processor idle time as one distributed processor waits for data from another.** Pioneers are attacking the problem with crossbar switching, intelligent backplanes or hardware designs such as the Cray T3D ring, says Derek Robb at Cray Research, Inc., the Minneapolis supercomputer maker. Cray also uses custom chips to serve as block-transfer engines at each processor node. Other solutions implant data-caching or data-monitoring intelligence in the backplane or on the crossbar switch. These are extremely expensive solutions, but they are a foretaste of what will one day be available at a lower price.
- **Improvements to the ratio of memory operations to floating-point calculations, the OPS-to-FLOPS ratio.** For maximum throughput, parallel processor designers seek a one-to-one ratio. In reality, it is something less than that. Wide internal bandwidths capable of data transfers of 100M byte/sec. or more are required.
- **Emergence of parallelizing compilers for C and Cobol as well as Fortran.** I tend to think of Fortran as the language of parallel processors, but Hogan says C "lends itself more to parallelization." Although there are no standards for parallel C yet, language developers are going ahead with parallelizing extensions to C, and Hogan predicts the first compilers will appear in 1994.
- **Emergence of tools for IS sites to parallelize their applications.** Outfits such as Sierra Pacific already supply parallelizing tools. Now, Hogan says, start-up companies such as Data Parallel Systems in Bloomington, Ind., are working directly on parallel applications.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737

Spreadsheets

Quattro Pro-motion rolls on

By Michael Vizard

After shipping more than t million units of Quattro Pro since cutting the spreadsheet's price to $49.95 last fall, Borland International, Inc. will try to keep the momentum rolling by extending the promotional offer through May t5.

The cost factor

Low prices are netting higher user-satisfaction ratings for Borland's Quattro Pro

SATISFACTION WITH COST

8.7	Quattro Pro
7.4	Excel
6.8	Lotus 1-2-3

RESPONSE BASE: 50 USERS PER PRODUCT

See Buyers' Scorecard (page 104) for complete results

Borland has sold double the 500,000-unit goal it set last fall, a goal most industry analysts expected the Scotts Valley, Calif., company would have trouble reaching.

Originally scheduled to end this week, the promotional offer appears to have been particularly successful in attracting first-time spreadsheet buyers. According to a Borland-sponsored survey of 442 new Quattro Pro users by Computer Intelligence in La Jolla, Calif., about 40% of the people purchasing Quattro Pro are new users.

In addition, the survey suggests that about 40% of those users are buying the spreadsheet for use in a nonresidential business. About 60% of the users surveyed said they would use Quattro Pro for business purposes in either their office or home. And only t0% of those surveyed said they used either Excel from Microsoft Corp. or t-2-3 from Lotus Development Corp.

Based on this data, industry observers surmise that Borland may have been particularly successful at penetrating the small business market with its promotional offer.

"The small business market has been a tough nut for the big vendors to crack all along. But now these people can invest in a full-function spreadsheet for only $50," said Daniel Gasteiger, a partner at Gasteiger & Deionas, Inc. in Cambridge, Mass.

In addition to attracting new users, Borland has also been successful in getting its installed Quattro Pro base to upgrade to Version 5.0.

Borland holds a 19.4% share of the total spreadsheet market, with t.7 million units shipped in t993, according to International Data Corp. in Framingham, Mass. Microsoft has a 38.8% share, with 3.4t million units shipped, and Lotus has a 39.6% share, with 3.48 million units shipped.

In the Windows spreadsheet market, Microsoft has a 47.5% share, Lotus 29.4% and Borland 17.8%. Microsoft's share of the Windows spreadsheet market may prove troubling because it was more than 80% just one year ago.

Quattro Pro takes Buyers' Scorecard honors. See story on page 104.

PowerPC sales likely slow in '94

By Ed Scannell and Michael Fitzgerald

AUSTIN, TEXAS

A Motorola, Inc. official last week predicted that PowerPC sales will bnild slowly in t994, in part because the alliance does not expect to attract hig-name PC vendors until t995 at the earliest.

To attract PC makers other than partners IBM and Apple Computer, Inc., Motorola must create less expensive support chip sets and components for PowerPC, according to Phil Pompa, Motorola's RISC mnrketing director. Motorola is working closely with an armada of motherboard and component msufacturers to do so, he said.

Without such an infrastrueture, which could he in place by year's end, the PowerPC initiative could easily get off to a slow start, killing any short-term chance of grabbing some qnick market share against the Intel Corp. juggernaut.

it might he "healthy in the long run" for the PowerPC to build up n solid pintform — complete with all the appropriate subsystems, components and related software device drivers — as opposed to trying to push it too fast, suggested William Abiondi, an analyst at BiS Strategic Decisions in Norwell, Mass.

Meanwhile, Motorola is also focused on getting third-tier PC manufacturers to adopt the PowerPC. Pompa said Motorola is pushing the chip as a way for these vendors to get a significant performance advantage over companies mnch higher up on Intel's supply list.

The key to volume sales, he said, is delivering operating software. If the major operating systems suppliers deliver their products for the PowerPC on timo, Pompa said he believes OEMs should ship a combined total of at least 2 million PowerPC-based systems by the end of 1994, with "the big wave" coming around Comdex/Fall '94. That figure wonld far surpass first-year sales of any other RISC processor, analysts said, but would fall far short of the 6 million to 7.5 million Pentiums that Intel expects to ship this year.

System ship schedule

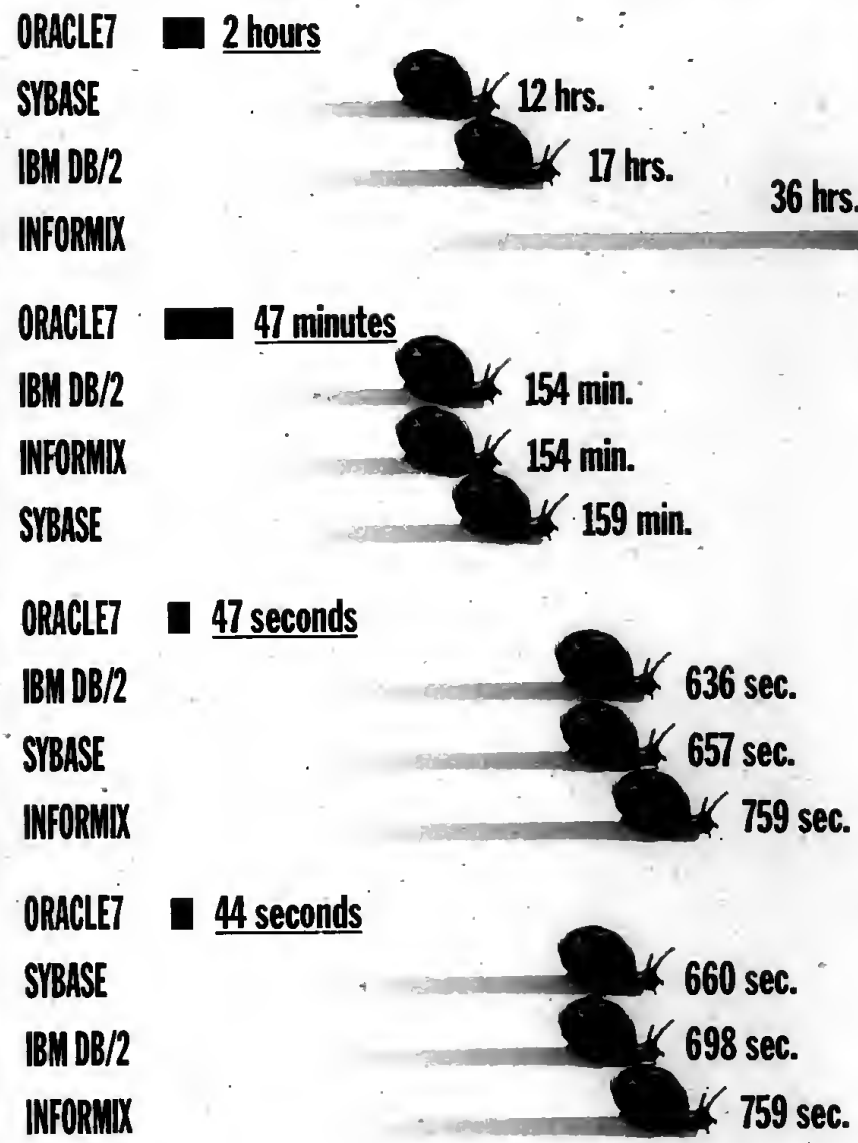
The first PowerPC operating system to ship in t994 should be a version of the Macintosh OS from Applo, due al the end of the first quarter. IBM, with WorkPlace OS, and Sun Microsystems, Inc., with Solaris, should follow in the second half of the year. An object-oriented operating system for the PowerPC from Taligent, Inc. — a joint venture of fBM and Apple — is not expected to ship until 1995.

Pompa said Motorola is also working closely with Insignia Solutions, Inc. and IBM to port Microsoft Corp.'s Windows NT to the PowerPC. Most industry observers say they expect it by the end of t994. At the same time, Motorola is pushing to get native software for the PowerPC.

To quickon the pace of acceptance for the PowerPC, Motorola has been working directly with leading applications developers to make sure they have whatever information they need to begin work on PowerPC versions of their best-selling software.

Gentlemen, start your snails.

PC Magazine independently defined and ran a battery of real-world performance tests to compare database server software. PC Magazine states, "**Oracle7 was the hands down winner on our performance tests,** outperforming the others by a wide margin."



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"Even with the many new features that were added, we found Oracle7 to be exceptionally stable"

PC Magazine

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PC Magazine

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Ingres Server *"...we would not recommend it because of the showstopping multi-user bug we encountered."*

Gupta SQLBase *"...took an unthinkable 60 hours to load the tables and then crashed on the index builds..."*

For your copy of the complete PC Magazine article, including test results call 1-800-633-1071 Ext.8129.

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News Shorts

Sun protests loss of NSA pact

Sun Microsystems Federal, Inc. filed a protest with the U.S. General Accounting Office over the amendment of an earlier solicitation by the **National Security Agency** for more than $200 million in high-performance workstations. Sun won a contract for the job last June, but the award was withdrawn in July when bidders **IBM, Hewlett-Packard Co.** and **Silicon Graphics, Inc.** alleged that Sun rigged its benchmark results [CW, Aug. 9, 1993]. Sun now claims that "substantial changes" in technical specifications and quantities sought require the NSA to start over with a completely new bid process. Sun also said the NSA's attempt to revive the original solicitation put it at a competitive disadvantage because the NSA provided confidential information to Sun's competitors.

HP takes covers off outsourcing unit

As at other outsourcing companies, one of the main challenges facing **Hewlett-Packard**'s new outsourcing division is how to price deals in an era in which outsourcers are growing more service-oriented and less processing-intensive. Lane Nonnenberg, general manager of HP's new Operations Services Division, noted that pricing will vary with each customer. HP will try to apply value-based pricing as well as cost-based formulas, he said. As expected, HP's outsourcing division will focus on client/server systems [CW, Jan. 3]. Customers include the Australian operations of London-based National Westminster Bank.

Desktop Pentiums pop up

The Pentium battle heated up last week, with **Gateway 2000, Inc., Ambra Computer Corp.** and **Packard Bell Electronics** all hawking 60-MHz Pentium systems and Peripheral Component Interconnect bus systems for less than $2,800. Gateway released the P5-60, whose base price of $2,495 includes 8M bytes of RAM, a 424M-byte hard drive and a 14-in. color monitor. Ambra cut prices 10% on its Pentium systems, so a base model with 8M bytes of RAM, a 540M-byte hard drive and a 14-in. color monitor costs $2,669. Packard Bell will sell a multimedia Pentium system for $2,795.

Pilot to pump data

Seven oil firms that belong to the Petrotechnical Open Software Corp. (POSC) last week launched a pilot project with consultants **Cap Gemini Sogeti** to create a common set of geological and oil field data. The system will load the data into Epicentre, POSC's common data model, which several commercial databases support. POSC's aim is to leverage open systems standards to increase the efficiency of oil exploration.

Washington Post eyes multimedia

Oracle Corp. and **The Washington Post Co.** plan to build products and services to let PC users build personalized electronic newspapers and see interactive advertising. Underpinning the system will be Oracle Media Server and Media Objects, a set of database products for running interactive video, audio and text feeds (see story at right). The firms did not outline specific product plans or timetables.

SHORT TAKES **The ASK Group, Inc.** last week reported a $13.7 million loss for its fiscal second quarter, including a $4 million restructuring charge, while sales sank 13% to $100.6 million compared with the same time last year. ... **National Semiconductor Corp.** made the world a little tougher for electronic snoopers last week when it announced a credit-card-size device that can be plugged into a PC and used to encrypt data or verify a user's identity.

More news shorts, *page 16*

Execs leery of electronic roads

Gore lays out information superhighway plan, but who's driving?

By James Daly
LOS ANGELES

Despite the lofty promise of the information superhighway, corporate executives listening last week to Vice President Al Gore's plans for an electronically linked nation remained skeptical about how useful it will be — and were leery about who is going to pay the bundreds of billions of dollars needed to pave the road.

"I simply don't know what you're going to get for a $200 billion bill," said Rupert Murdoch, chairman and chief executive officer of News Corp., which owns magazines, newspapers and television stations on three continents.



Vice President Al Gore

Business representatives also expressed concern about security and data sharing on such a system. "I can't imagine that every Fortune 500 company is going to want people jumping onto their networks," said Gari Cheever, who specializes in telecommunications law as a partner at the law firm of Brobeck, Phleger and Harrison in Palo Alto, Calif.

In an hour-long speech to the Academy of Television Arts and Sciences that was long on ideals but short on specifics, Gore vowed to hack away at the strangling telecommunications regulations that some fear could impede a nationwide series of interlocking networks. "We want to clear from the road the wreckage of outdated regulations," Gore said to an audience of 1,500 leaders of the communications and entertainment communities.

The ultimate destination, Gore said, is linking every desk in every business and home in the country. "Superhighway" is the term he has used to describe an elaborate network of electronic pathways on which all sorts of electronic data can travel to PCs — or "smart TVs" — from any database or network in the nation.

In many ways, this network already exists via services such as phone lines and the Internet; what is needed are channels to bring the information right to the user, Larry Ellison, chief executive officer of Oracle Corp., noted that many of the networked services that Gore envisions are already available and spoke of networked hospitals in which doctors share critical medical information.

Gore's plans to ease government red tape had executives hoping they could sell some of their corporations' excess bandwidth. Today, many large corporations communicate with other offices via wide-area networks, usually renting T1 lines from local long-distance carriers based on their peak carrying times. When network traffic is slow, such as during the night, the same bandwidth is extraneous. Current Federal Communications Commission regulations make it difficult for these private companies to sell their extra capacity.

Additional proposals

The vice president proposed an alternative regulatory structure for companies that provide broadband interactive services. Companies that opt to be regulated under such a structure, to be called Title VII of the Federal Communications Act, would have to agree to provide access to their lines to competing telecommunications companies. For example, a telephone company might have to allow a cable TV company to send programs over the phone lines.

Gore said he wants the FCC to make sure that users would have access to information on many networks "without [suffering] monopolistic bottlenecks." In theory, this would offer corporate customers a wider choice of services at more competitive prices.

Gore didn't reveal legislative specifics, but he said he endorses the basic principles of a bill sponsored by Democratic Reps. John Dingell of Michigan and Jack Brooks of Texas that would allow long-distance and local carriers to compete against one another.

Oracle set to build interactive TV systems

By Kim S. Nash

Oracle Corp. will disclose pacts tomorrow with several makers of small set top boxes and application development tools companies to build interactive TV systems, an Oracle source said.

The announcement comes on the heels of a multiyear deal unveiled last week between Oracle and Bell Atlantic Video Services Co. to produce "commercially viable" interactive services by fourth-quarter 1994, including movies-on-demand and home shopping.

Also, as promised four months ago, Oracle Media Server and Media Objects — key software pieces for managing and building interactive applications — are slated to ship this week [CW, Sept. 27, 1993].

Media Server is a set of database modules designed to run on massively parallel processing (MPP) machines and manage images, full-motion video and CD-quality sound. Media Objects is a development kit for building applications to run across the server.



Although some mainstream information systems users of Oracle said they worry that their database provider might be overextending itself, most were supportive.

"I like the idea of Oracle moving ahead, as long as the products I need ... continue to get attention," said Cari Esposito, chairman of the New York Area Oracle Users Group.

Remember the little guy

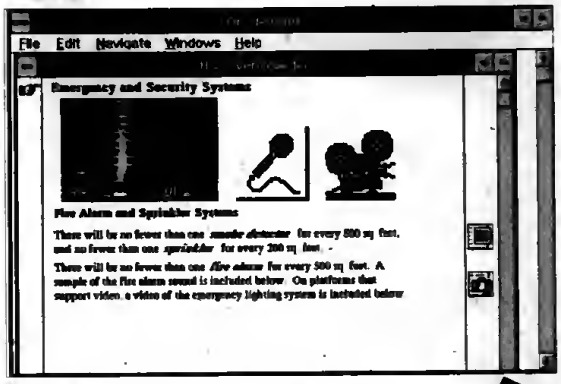
Oracle Chairman Jim Abrahamson maintained that although the firm has charged top executives with signing up big-name phone and Hollywood companies to ride with Oracle down the information highway, the company has the money and staff to keep IS products current. Further, users can expect Media Server features to "roll back into the industrial product," he said. "We won't forget our customers."

Several Wall Street analysts said they like Oracle's tenacity. Interactive TV "is a large, large opportunity ... and it's important for them to look to other areas of growth," said Bill Shattuck, an analyst at Montgomery Securities in San Francisco.

NCube — owned by Oracle Chief Larry Ellison — is slated to provide MPP machines to manage Bell Atlantic's giant interactive network. It will start on existing cable lines, then move to fiber-optic technology in four to five years.

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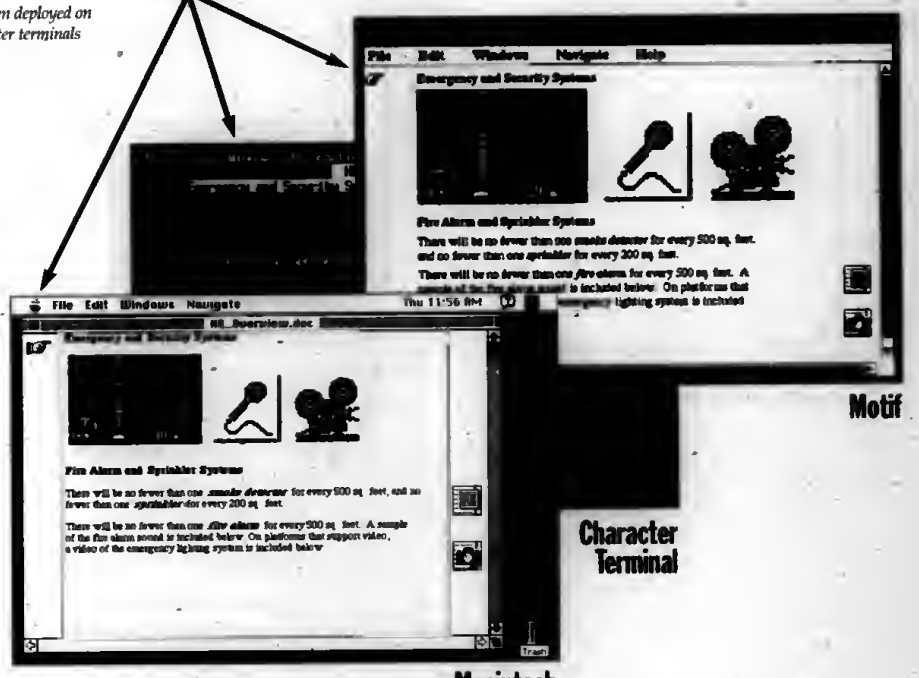


This application was designed in Windows, then deployed on Windows, Motif, Macintosh, and even Character terminals without any programming.

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Chris Nicholls
Manager IS Dev.
British Telecom, UK







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Digital to enhance TP monitor, database

By Craig Stedman

Digital Equipment Corp. has licensed both IBM's and Transarc Corp.'s transaction processing software and will support the two products on Alpha AXP systems alongside its own transaction monitor, according to industry analysts briefed on the plans last week.

Digital's embrace of IBM's CICS and Transarc's Encina software will be announced at its next big product introduction on Feb. 8, along with a similar overhaul of Digital's database strategy to emphasize integration of databases from multiple vendors.

Analysts said the changes may help Digital sell its own transaction processing and database products in the short term by easing user fears of getting dead-ended. But they also noted that the company now has a graceful migration path itself if those products cannot keep up with the competition.

"Digital is saying that those things that are worthy will survive and those that aren't, won't," said an analyst who asked not to be identified. Some users seemed interested in the multivendor strategy but said they still need the Digital-developed products for existing applications.

Sources at last week's briefing said Digital is implementing CICS, Encina and its own Application Control and Management System (ACMS) transaction monitor on top of Transarc's development tool kit, which is layered on the Open Software Foundation's Distributed Computing Environment (DCE).

Three's not a crowd

DCE could be used to share data among the three transaction monitors even if applications were still written to individual application programming interfaces (API), the sources said. Officials at Digital, IBM and Pittsburgh-based Transarc all declined to comment.

On the database side, Digital plans to position DB Integrator, a product for tying multiple databases together, as its key technology ahead of the Rdb relational database, sources said.

Users will now be urged to write applications to the SQL API within DB Integrator rather than to Rdb or other databases, the sources said. DB Integrator could then act as an intermediary between databases residing on multiple hardware platforms.

Users said support for multiple databases and transaction monitors may be useful for new applications, but they showed little interest in rewriting code. While Digital has promised ACMS and Rdb will not be abandoned, that issue does bear scrutiny, the users added.

"I'm pretty sure ACMS is going to stick around for a long time, but you have to read between the lines on announcements such as this," said Matt Holdrege, senior network specialist at PacifiCare Health Systems, Inc. in Cypress, Calif.

Joe Archer, assistant vice president for application development at The Colonial Group, Inc., a Boston mutual funds company, said he will likely revisit the topic of Rdb's future based on the upcoming changes. "What we heard six months ago may not be the direction for the company now," he said.

Portable CICS

IBM and Transarc have linked up to develop and market a portable version of IBM's CICS transaction monitor for use by other system vendors, sources said. Digital, however, is the first to detail plans for implementing the software.

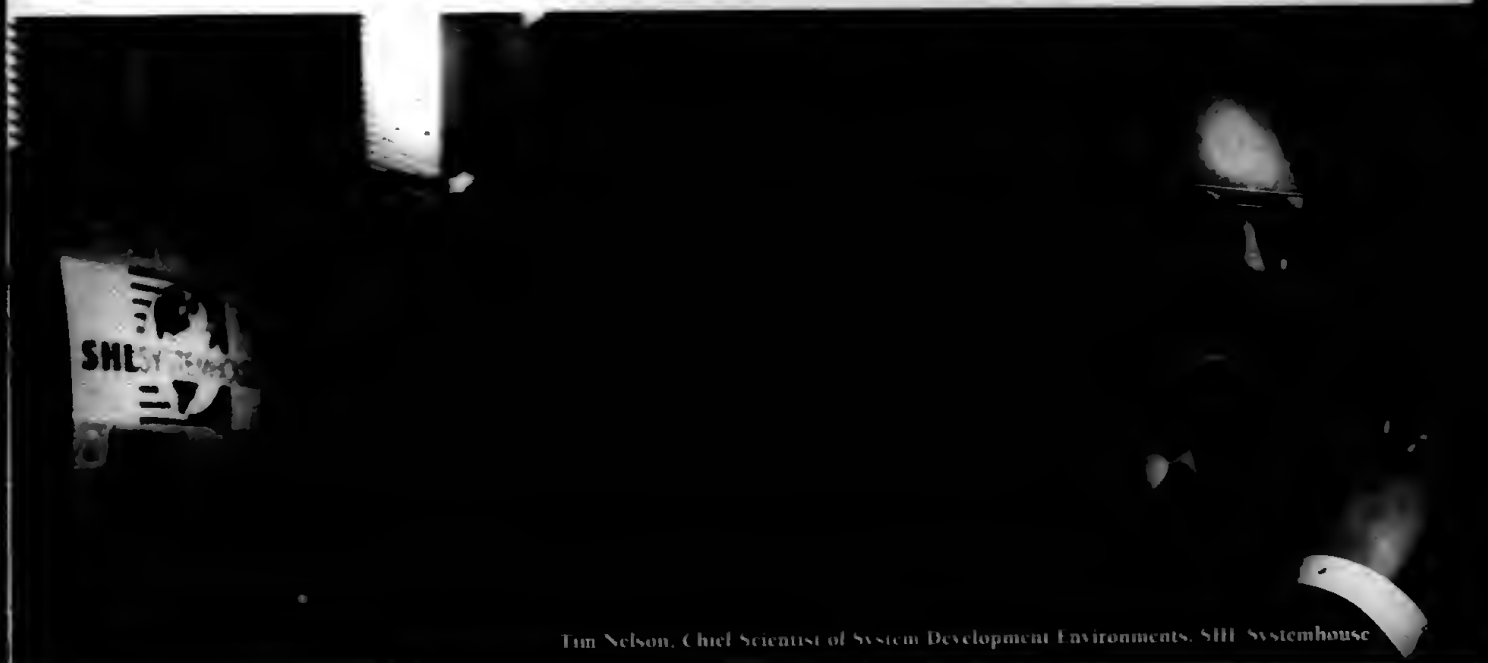
The Transarc deal marks the start of a more aggressive effort by IBM to interest other vendors in using CICS, according to the sources.

IBM and Transarc plan to announce their partnership next week, the sources said.

Hewlett-Packard Co. was the first CICS licensee in 1992, but it had to build the software on top of Transarc's environment itself.



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"We find that the use of the COBOL makes it a lot easier for mainframe programmers to feel comfortable with the environment on day one. The interesting side-effect is that once they start to use the tools, they become more comfortable with the workstation and begin to explore how to get the best from it. It works out to be a very good way to transition from a mainframe-oriented programmer shop into something that can tackle client/server development."

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ATM demos provide reality check at ComNet

By Stephen P. Klett Jr.
and Lynda Radosevich

Asynchronous Transfer Mode (ATM) technology demonstrations, designed to reassure users that ATM is indeed becoming a reality, will hold the spotlight at next week's Communication Networks Conference and Exposition (ComNet) '94 show in Washington.

"Most people will be going to the show to see if ATM is for real, and the appearance of adapter cards, routers and hubs will give the technology credibility," said Kathryn Korostoff, president of Sage Network Research, Inc. in Natick, Mass. "However, FDDI will probably still hold an edge because ATM is still unproven and expensive," she added.

Batter up

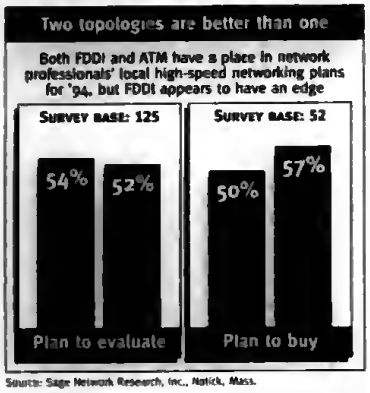
Among the ATM announcements users can expect to see are the following:

• **Sun Microsystems Computer Corp.** in Mountain View, Calif., will unveil a $995 ATM adapter card for Unix-based workstations. Sun said the card supports a 155M bit/sec. data transfer rate over fiber or Category 5 unshielded twisted-pair wiring and will enable TCP/IP applications to run transparently over ATM.

• **Interphase Corp.** in Dallas will show higher-priced ATM adapter cards for Unix systems — one for Sbus-based systems and one for VME bus-based systems — that cost $1,395 and $2,895, respectively. The cards have an architecture that lets users purchase connectivity modules for specific media, such as fiber. The first media module is a 100M bit/sec. fiber module, which costs $600.

• **Fibercom, Inc.**'s internetworking spinoff **NetEdge Systems, Inc.** in Roanoke, Va., will show its first product, the ATM Connect router. It connects traffic among Ethernet, Token Ring and Fiber Distributed Data Interface LANs and ATM servers and workstations via ATM switches at up to 25M byte/sec. throughput, according to NetEdge. Pricing ranges from $20,000 to $42,000.

Separately, **MCI Communications Corp.** will announce an interactive, Windows-based application that lets its customers file and track their own trouble tickets on MCI's telecommunications management system. Also, Sun will unveil a $795, 10M to 100M bit/sec. Ethernet adapter card, which it plans to integrate on the motherboard of its workstations.



Source: Sage Network Research, Inc., Natick, Mass.

Out of sight....

ComNet '94

ComNet '94 attendees looking for remote office connectivity will find a host of new options in the guise of lower-cost routers designed for branch office sites. Introductions slated for the show include the following:

▶**MCI Communications** will announce a basic rate Integrated Services Digital Network (ISDN) service that will let customers obtain home and remote office ISDN connectivity at lower rates than standard dial-up costs. MCI is betting the lower rates will spur people to use ISDN to simultaneously send and receive voice, data and video communications.

▶**NEC America, Inc.** will demonstrate a low-end router that uses dial-up lines for wide-area network connectivity and supports ISDN. Slated for an April delivery, it targets small or remote offices — 10 to 20 users — that do not need top-speed connectivity and do not want to pay for a dedicated T1 line. The $4,000 router reportedly can send data out over several dial-up lines at speeds of 256K bit/sec.

▶**3Com Corp.** will unveil its lower-end NetBuilder Remote Office router family. The bridge/routers, which start at $1,795, will support WAN services including frame relay, ISDN, Point-to-Point Protocol, X.25 and the major LAN protocols.

▶**Proteon, Inc.** will show a low-end multiprotocol bridge/router series for Ethernet and Token Ring SNA environments. Set to ship in April, the product is priced starting at $4,995 and includes support for TCP/IP, IPX, Point-to-Point Protocol, Simple Network Management Protocol and frame-relay protocols.

Oil firm tests fast net

Amoco trial explores cost, scope of ATM technology

By Ellis Booker

■ Amoco Corp. last week disclosed that it is conducting a major test of Asynchronous Transfer Mode (ATM) networking designed to look at the cost advantages accrued from and the applications enabled by ATM technology.

Dubbed ARIES, which stands for ATM Research & Industrial Enterprise Study, the trial is described as a "scale model" of the Chicago oil company's existing international network. It will test interfaces against a variety of LAN and wide-area network technologies already used in the company's corporate network.

Planned are tests of ATM-to-the-desktop, as well as ATM tests for local, campus and metropolitan-area networks using carrier services and international ATM links.

The tests are visually oriented and object-oriented and are image- and computationally intensive, according to Dave Beering, Amoco's staff telecommunications analyst for information technology. He declined to give further details.

ATM is a scalable, packet-data protocol that uses large, fixed-size cells (53 bytes) to handle data, voice and video traffic. The protocol has attracted intense interest from end users, who hope it will put their LAN and WAN networking onto a single platform.

A number of large corporations are conducting trials of their own, including Bear, Stearns & Co. in New York and Northeast Utilities in Berlin, Conn.

"Instead of talking about [ATM], we're building a model to study it," Beering said. He said he hoped to distribute results from the trial via the ATM Forum, although he said no formal process for this has been worked out with the Mountain View, Calif., group.

Nationwide links

The ARIES testbed will link various research, production and manufacturing sites around the country, involving 13 vendors to start. Already working in the ARIES network is a 90M bit/sec. connection between Amoco's Chicago headquarters and Amoco Production Co. in Houston. This WAN was provided by WilTel in Tulsa, Okla. Half runs over a dedicated DS3 (45M bit/sec.) circuit; the balance is a WilTel ATM service.

Amoco will use the NETAdaptive ATMX ATM switch from Network Equipment Technologies, Inc. in Redwood City, Calif., as its ATM LAN backbone switch. The NET switch will handle traffic from workstations, routers and hubs.

Beering said Amoco will also use Sprint Corp. for connections to additional locations. "To my knowledge, we're the only customer with two [carrier] services in the wide area," he said.

Messaging

AT&T bundles voice, E-mail

By Lynda Radosevich

AT&T last week provided a glimpse into a future where voice, text and image-based messages will coexist on one platform.

The vendor introduced its next-generation business messaging system, Intuity, and said it will ship next month. The system integrates voice messaging and voice-response services, such as dialing a bank for account balances, into one platform.

AT&T currently handles those services separately. An integrated platform should reduce application development time and simplify systems administration, AT&T said.


AT&T's Intuity system is based on an Intel 1486 processor and the Unix operating system. It includes messaging service software and applications. Pricing ranges from $21,000 to $269,000, depending on the number of users supported.

Video E-mail

Additionally, the company said it will add to Intuity electronic mail and fax with text-to-speech translation capabilities late this year and video and image capabilities by late 1995.

Having all these capabilities on one platform opens the door for "multimedia messaging," whereby users can access one mailbox using a telephone, a PC or a personal communicator and, for example, have a fax read to them or watch a stored video with a voice message.

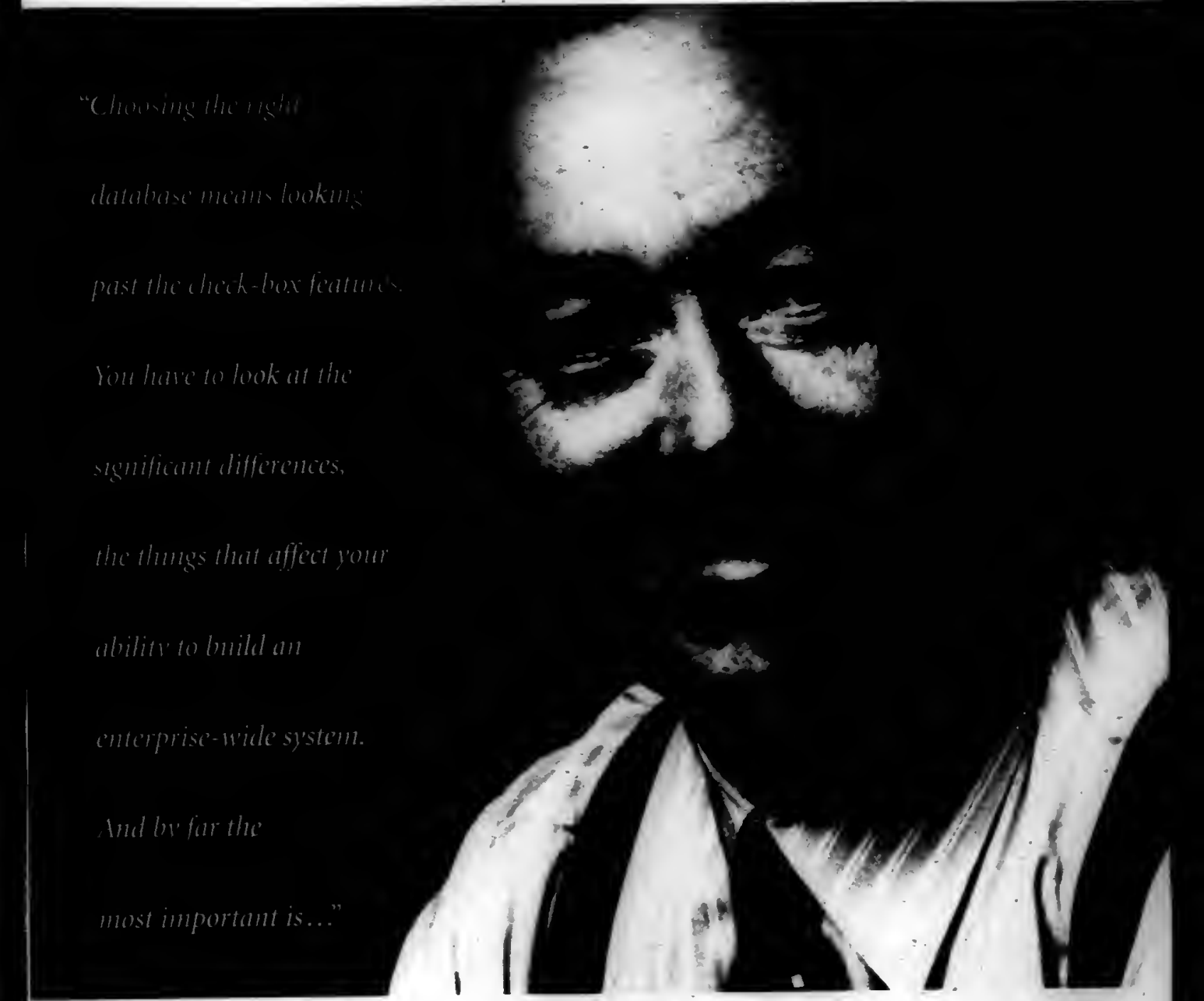
"I'm intrigued by a person [being able to use] a generic mailbox on a singular platform for text, voice and fax," said Donald Larson, director of telecommunications services at Kraft General Foods in Northfield, Ill.

Kraft is installing Intuity in its three-building Northfield campus in order to use its voice messaging and routing capabilities. Larson said he ultimately wants to add the advanced capabilities. He praised the AT&T platform for having integrated capabilities that are software-based and not tied to customized hardware.

That means that "by the end of the decade, there is no reason why a messaging system couldn't send all types of messages through LANs and [wide-area networks] directly to your desktop, rather than [through] a centralized host," Larson said.

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Gerstner

CONTINUED FROM PAGE 1

IBM's financial results, that "the last thing IBM needs right now is a vision." Instead, he has IBM working on strategy statements for all its major businesses and will unveil those plans as the year progresses, he said. This applies to existing lines of business as well as to businesses that IBM will pursue more aggressively, such as consumer products and network services.

Roll out the barrel

IBM will roll out these strategies one by one, Gerstner said. "It's not our current plan to fire a cannon," he said, noting that "nobody's a visionary until they succeed."

One strategy is to continue lowering the cost of mainframe ownership on both the hardware and software fronts. IBM will also work on making host systems easier to use and better able to plug into the networks of other computers, Gerstner promised.



To ensure that such lofty expectations are met, IBM will continue to invest "hundreds of millions" of dollars into mainframe development, he said.

This will be crucial going forward, Gerstner said, because, if anything, customers will need even more big-iron horsepower. "The idea that there are no longer going to be any mainframes is one of the great frauds perpetrated in the world," he said.

For their part, customers welcomed this news. "We need to continue to see mainframe costs come down," said Robert Benmosche, executive vice president of operations and systems at PaineWebber, Inc. in Weehawken, N.J. "I agree with Gerstner in that I clearly see the mainframe as very much a part of our architecture down the road."

On the customer service front, Gerstner acknowledged that "there is a need for us to do better. IBM has withdrawn a huge security blanket from customers." He said the company is "well on the way" to defining, with customers, different service levels for various products.

"So, if you buy a mainframe or an RS/6000, you get a certain amount of service that comes along with that. But if you want us to do all the upgrades of your software, we're going to have to charge you for that."

The problem, he said, is that a lot of customers "remember the good old days" when IBM provided all kinds of services for no additional fee. "We haven't articulated as clearly as we should" the new ground rules related to service levels, he said.

And that's not all

Some believe there is more work to be done on the service side. "I'm wondering when they're going to stop the reorganization so I can relearn the bureaucracy," said M. Lewis Temares, chief information officer at the University of Miami. "It takes me longer to get answers. We don't know where to go now, but we'll learn."

For now, it does not seem as though IBM's internal structure will stabilize anytime soon. An additional 40,000 people are expected to leave the company this year, bringing the total worldwide employee base to around 225,000 by year's end. IBM's employment peaked at 407,000 in 1986.

Gerstner confirmed that the sales force has already been among the Top 3 areas hardest hit by the company's downsizing. Industry analyst Bob Djurdjevic, president of Annex Research in Phoenix, said he expects the North American sales force to reduce its costs by about $1 billion this year, primarily through consolidating offices and reducing internal information technology costs — which amount to about 7% of sales for the company as a whole.

Working on the edge

Gerstner will continue to pound away at interdivisional communications and cooperation issues. At the same time, he will continue efforts to improve employee morale. But in most ways, Gerstner said, he does not want to foster a "stable" environment. "I want the company to always feel insecure, hungry — somebody breathing down our neck. Stable to me means complacent, and I don't think you can be stable."

Instead, he said he sees his job as providing a culture that manages change and being "the person that creates the change. And once everyone else catches up to you, start the change process all over again."

Editor in chief Bill Laberis and Mid-Atlantic senior correspondent Thomas Hoffman contributed to this report.

Pulse check

One sign that Gerstner has been busy tuning in to the customer pulse is a plan to "get our [research and development] laboratories much closer to our customers." For example, he said an IBM networking laboratory manager recently helped develop a way for a customer — in this case an insurance company — to reduce its claims processing costs by using laptops and mobile computing.

Lou-bytes: No single solutions

IBM Chairman Louis V. Gerstner addressed a wide range of issues during an interview with *Computerworld* last week. Among them:

▶ For the most part, IBM's problems have to do with margins dropping — from 56% to less than 40% in the past five years — and not with demand for the company's products. Revenue has held fairly steady for the past few years at around $60 billion to $64 billion. The problem is trying to make money on a revenue base that has plateaued, thus the cost-cutting and consolidation measures.

▶ "I'm having a lot of fun watching this industry from the inside now. This is an industry that, in a sense, is in love with itself. I mean, it loves to talk about technology. I've never seen an industry that talks more about things that it hasn't done and that it's going to do. In my previous life, you weren't allowed to do those kinds of things in public companies."



IBM Chairman Louis V. Gerstner *is "having a lot of fun watching this industry from the inside."*

▶ Customers talk to Gerstner about network-centric computing "all the time," he said. And while IBM is providing those kinds of technologies, he said that as a whole "the industry hasn't produced the kind of systems management capabilities to really do what customers want." He also acknowledged that the company was "too slow" in moving to network computing.

▶ A key priority is to "change our speed to market with our technology." Gerstner did not outline a specific plan to do this and said, "I don't think there are any single, bold strokes you can make to solve this problem."

▶ He maintained that IBM will continue using Intel Corp. microprocessors "for many years to come. It is not difficult for me to see a world where [IBM's] PowerPC coexists with Intel."

▶ OS/2 "will continue to evolve," Gerstner said. However, he sent a mixed message about the competitive situation with Microsoft Corp.

Although he agreed that an operating system must achieve critical mass to attract the third-party applications that will sell it, he said he has "no idea" what that number is. Instead, he said, "our software strategy is directed at what our customers tell us they want and is not in any way directed with 'how many copies have I sold' as the end game."

▶ IBM's future desktop operating system strategy revolves around the Workplace Shell operating system, "which at its base has OS/2 and at the top has our Taligent object-based framework," Gerstner said.

▶ Gerstner recognizes that "the race in the software industry revolves around object-based software."

IBM/NCR team to link LAN systems

By Lynda Radosevich

A partnership between IBM and NCR Corp. should provide access to servers running IBM's AIX Unix and Microsoft Corp.'s LAN Manager to users of IBM's OS/2-based LAN Server before the end of the year. Some time later, that partnership is expected to let LAN Server users access files and services on Microsoft's NT Advanced Server.

IBM last week said it will work with NCR to create and deliver an AIX version of LAN Server. The server will be based on a Unix operating system that NCR developed using Microsoft LAN Manager code.

NCR said it is upgrading its Unix software using source code from Microsoft NT Advanced Server. NCR plans to use that NT-based software, which will be complete in the second quarter, in subsequent IBM LAN Server for AIX versions. This will ensure complete interoperability between the two systems, an NCR spokeswoman confirmed.

IBM benefits big

Bob Gill, a vice president of network computing at Gartner Group, Inc., said the NCR partnership could be a good way for IBM to stay abreast of Microsoft's networking technology.

Additionally, the NCR architecture provides a "wonderful" set of tools IBM can use to integrate LAN Server with Novell, Inc.'s NetWare and the Distributed Computing Environment, he said.

However, IBM downplayed the Microsoft/NCR/IBM code train and emphasized the OS/2 and AIX compatibility.

"The goal is to allow LAN Server clients and servers to get to AIX servers," said Art Olbert, IBM's director of LAN systems for personal software products.

For instance, a major automobile manufacturer that requested anonymity is looking at LAN Server for AIX to link engineers using RS/6000s with business users on OS/2 LAN users.

Currently, LAN Server users access AIX servers via TCP/IP or Novell's NetWare for Unix. LAN Server for AIX, which is slated for beta delivery in February, should appeal to IBM-dominated shops that port their mainframe applications to the RS/6000 and want to access that data from PC LANs, said Marty Palka, a principal analyst at Dataquest, Inc.

IBM pins hopes

CONTINUED FROM PAGE 1

are planned for the various versions over the course of the year, IBM officials said.

While observers said they understand the reasoning behind IBM's decision to repackage OS/2 — such as the capability to respond more quickly to market opportunities and preempt some of Microsoft's strategies with Chicago — some said IBM runs the risk of confusing users with too many versions.

"IBM is getting close to duplicating Microsoft's most embarrassing problem: the needless proliferation of versions," said Jeff Tarter, editor of the "SoftLetter" newsletter in Cambridge, Mass. "It always results in the poor customer having to figure out which version to standardize on and hope that one won't be abandoned."

Tarter said IBM should continue focusing on selling the versions of OS/2 it currently has and not get too preoccupied with Microsoft's various Windows strategies. The company has shown strong momentum, selling more than 2 million copies of OS/2 2.1 since June and 300,000 copies of OS/2 for Windows in less than two months.

"They can't compete with Chicago because it is a moving target. Whatever IBM ends up doing, Microsoft will end up repackaging or repositioning [Chicago] until they think they have outflanked IBM," Tarter said.

Some of the other enhancements slated to be beta tested in the first half of this year include C-2 level security; enhanced multimedia and pen support; enhancements to the Workplace Shell interface, called "dashboards," to make the product easier to use; and Win32s support, which enables OS/2 to transparently run 32-bit Windows applications.

Symmetrical multiprocessing (SMP) support for OS/2 will come in two versions, company officials said last week. One, already in beta testing, will support IBM's proprietary code for OS/2; a second version will support Intel's APIC chip, which offers a standard way to handle interrupts on systems using SMP. No ship date was provided.

"Because there is no standard for SMP today, each version has to be hand [crafted]," said Paul Giangarra, lead architect for Personal Software Products' desktop operating system.

"That will change when Intel announces its SMP standard, which should be later this year," he added.

Last year, some IBM officials said the SMP capabilities for OS/2 would be available as an add-on technology and would be bundled with the core product. They now say they will probably make SMP support available only as an add-on to be sold mostly through hardware OEMs.

The first beta of the SMP product, which supports 16-way symmetrical multiprocessing, shipped in late December.

More DOS

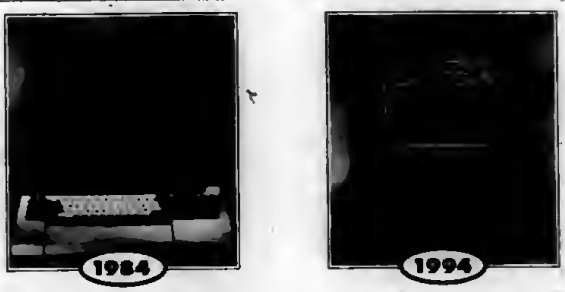
IBM will shortly take the next jump in its game of DOS leapfrog with Microsoft. It will deliver to beta testers a follow-up to its PC DOS 6.1 that includes improved memory management and several enhanced utilities.

IBM officials also said last week the company would deliver by year's end a follow-up to PC DOS 6.3, called Version "X.Y," that would incrementally improve on Version 6.3.

PC DOS 6.3 reportedly improves upon PC DOS 6.1's memory management by adding a multiconfiguration capability. This allows users to call up, with a single keystroke, a specified combination of applications for DOS or Windows that makes the best use of memory.

IBM has also added improved support for Stac Electronics' Stacker 3.1 compression utility and has improved PC DOS 6.1's compression utility by allowing it to compress around uncompressed data on a hard drive.

The product is expected to enter beta testing this month and to be available late this quarter or early next quarter. — *Ed Scannell*



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News Shorts

IBM turns to Object Design

Rather than build its own object-oriented database, IBM plans to resell products from **Object Design, Inc.**, in which IBM bought a minority stake last April. Users will be able to get ObjectStore from IBM immediately, an IBM spokeswoman said. ObjectStore is built into IBM's FlowMark work-flow software, announced four months ago and due out early this year.

ISDN trial on tap

Ameritech Corp. and **Nynex Corp.** are expected this week to interconnect their integrated Services Digital Networks (ISDN) in the first trial of Inter-Local Access Transport Area, multirate ISDN. The carriers will demonstrate the link between the World Trade Center in New York and Chicago's Merchandise Mart via a videoteleconference.

HP upgrades OpenView

Hewlett-Packard Co. introduced OpenView 3.3, the last major release of its network management software before it is moved to a distributed architecture. Version 3.3 has roughly 30 enhancements, aimed at managing alerts and easing application development.

IBM servers broken out

The **IBM PC Co.** shuffled its organizational structure, breaking out its servers into an official unit called PC Co. Servers and combining the ValuePoint and PS/2 brands into one unit, called Commercial Desktop Brands. Michael Coleman was named general manager of the servers unit, which includes the PS/2 models 85, 95, 195 and 295. The PC Co. also formed a federal channel to improve its government sales effort.

Intel seeks videoconference standard

Intel Corp. is bringing together vendors to form a specification for videoconferencing and document conferencing using PCs. The group, which includes Compaq Computer Corp., Compression Labs, Inc., Ericsson Business Networks AB, Lotus Development Corp., Northern Telecom, Inc., Novell, Inc., PictureTel Corp., Software Publishing Corp., WordPerfect Corp., VTEL and VideoServer, Inc., will release a specification by midyear. Desktop videoconferencing is not expected to go mainstream until 1995, when a preemptive multitasking version of Windows is scheduled to arrive.

Alliances abound at Object World

At Object World last week, **Sunsoft, Inc.** and **Iona Technologies Ltd.** said they will integrate their Common Object Request Broker Architecture-compliant object technologies. The two companies demonstrated interoperability between Sun's Project Distributed Object Environment and Iona's Orbix and will ship a product by the third quarter. Other deals announced included pacts with Servio Corp., Protosoft, Inc. and Centerline Software, Inc.; plans to incorporate computer-aided software engineering and C++ support with Servio's Gemstone object database; and expanded support for ParcPlace Systems, Inc.'s VisualWorks Smalltalk development environment from Sunsoft, Digital Equipment Corp. and Hewlett-Packard Co.

SHORT TAKES **CompuServe, Inc.** lowered rates for its CompuServe Information Service by 40%.... **Southland Corp.** chose The Santa Cruz Operation's SCO Open Systems Software to automate 5,500 7-Eleven convenience stores.... Larry Bacon, chief information officer at **The Travelers**, retired as of Jan. 1, according to a company spokesman. He has been succeeded by Richard Morrison, former CIO at Primerica Corp., which merged with The Travelers at year's end.

AMD plots life after Intel

Chip maker to emphasize Windows rather than x86 compatibility

By Michael Fitzgerald
AUSTIN, TEXAS

Faced with the pending retrial of a patent infringement lawsuit filed by Intel Corp., Advanced Micro Devices, Inc. (AMD) is now talking about the end of its days as a clonery. Its new focus: Windows compatibility.

Though the move is largely a marketing one — AMD chips do not run Windows software differently than do Intel or Cyrix Corp. chips — the shift will become important when AMD deviates significantly from Intel chip designs. This will happen next year when AMD begins shipping a Pentium-class chip dubbed the K5.

Chip strategy

AMD's aim is to focus on producing chips that run Windows software at speeds comparable to Intel's offerings. This will keep AMD from continually playing catch-up with Intel in the market, said Subodh Toprani, AMD's director of marketing and systems engineering.

If AMD continues to merely clone Intel's products, "eventually, they'll kill us," Toprani said. "If people are not buying hardware; they're buying software compatibility."

The K in K5 stands for kryptonite, the element that renders Superman helpless. Toprani said AMD expects K5 will differ from Intel's Pentium in pin-out, microcode and other ways. K5, like Pentium, will also be superscalar.

Lethal legalities

A successful move away from copying Intel may help AMD avoid death in the courts, too, as Intel last year took the upper hand in its legal battle to stop AMD from building chips that use Intel code.

Analysts applauded AMD's strategy.

"They're trying to make a processor which is 'streamlined' for today's software without having to carry the baggage of previous stuff," said John Dunkle, president of WorkGroup Technologies, Inc. in Hampton, N.H.

AMD began the shift last October when it started putting the Windows logo on its chips in conjunction with Microsoft Corp., analysts noted.

For 1994, though, AMD's high-profile Intel clone business will continue to be just that, Toprani acknowledged.

He said Intel's recent downward pricing moves and confirmation of the Intel DX4, a clock-tripling 486 [CW, Jan. 10], were not unexpected. AMD plans to come to market with its own clock-tripler within six months, he added.

January surprise

Though AMD posted sales of $1.65 billion and profits of $228 million for 1993 (both records), the fourth quarter caught analysts by surprise. Sales for the quarter were $413 million, up only slightly from the year-earlier period, though profits plunged about 40% compared with 1992's fourth quarter. AMD blamed the fourth-quarter profit hit on lower margins on its 386 clones and its programmable logic device business. Intel cloning makes up 25% of AMD's business.

Fast 486/DX4

CONTINUED FROM PAGE 1

Computer Corp., confirmed that DX4 systems "do in some ways beat Pentium 60s." Even Hans Geyer, vice president of Intel's microprocessor division, conceded that a well-designed DX4 could outperform a poorly designed or poorly optimized Pentium system.



Sources at several of the Top 10 PC makers said that because of DX4's performance, they are telling customers to skip the current generation of Pentium PCs and buy 486 systems or wait for the next generation of faster Pentium-based boxes.

Lower prices

At least one acknowledged doing this in part to spite Intel, which has already driven the price of Pentium systems down to levels that most PC vendors did not expect. Gateway 2000, Inc., Ambra Computer Corp. and Packard Bell Electronics last week announced Pentium PCs that were priced at less than $2,800, months sooner than Intel had predicted this kind of pricing.

Still, such pricing had one OEM asking, "Why should we have our customers pay a lot of money for a first-generation Pentium system when they can buy a less expensive box that gives them more performance?"

As a result, analysts suggested that Pentium may not be such a good buy for users in the next two quarters. "It's a really good question why people will buy Pentium systems instead of DX4s," said Dean McCarron, an analyst at Mercury Research in Scottsdale, Ariz.

An Intel spokeswoman disagreed, however, and pointed to a similar situation early in the life of the 1486, which initially was challenged by high-end 80386 systems.

And, some users said they were skeptical of the DX4. "I think maybe the general public will go for [the DX4] right off the bat based solely on price," said Scott Lee, PC support manager at Blount Construction Co. in Montgomery, Ala. "However, people like us that run critical business applications will need to be convinced that this clock-tripling technology won't cause programming problems and will run just like the 486 always has, only faster."

Intel's next Pentium generation, called P54C, will initially have three speeds: 50/75 MHz, 60/90 MHz and 33/100 MHz. It is expected to be announced early in the second quarter, with systems based on it shipping in the third quarter, sources said. Intel refused to comment on unannounced products.

The P54C parts, the first Pentiums to be built with a 0.6 micron assembly process, will replace the 60- and 66-MHz Pentiums on the market now but will leave a several-month window where Pentium performance will not be significantly higher than that of DX4 systems.

Pentium quandary

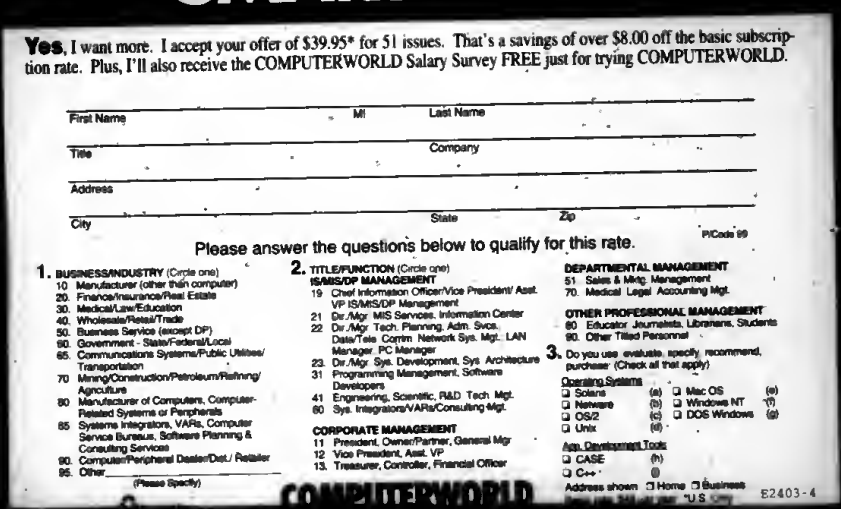
Sources at hardware OEMs said the price/performance of DX4 was an issue because they have to decide whether to drop the current Pentium line earlier than expected or maintain it and possibly be stuck with unsellable systems.

"It's a sticky decision, and if I'm wrong it costs my company millions of dollars," said one OEM source, who asked not to be named.

Vendor sources said, however, that they will be glad to see the P54C appear. The current Pentium "has got to go," said one vendor. "It's hot, it's huge, and it can't meet the Energy Star requirements because it's 5V only, where [the new ones] are 3.3V or 3.3V tolerant."

Staff writer Stephen P. Klett Jr. contributed to this story.

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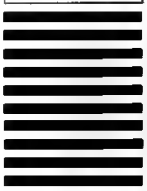


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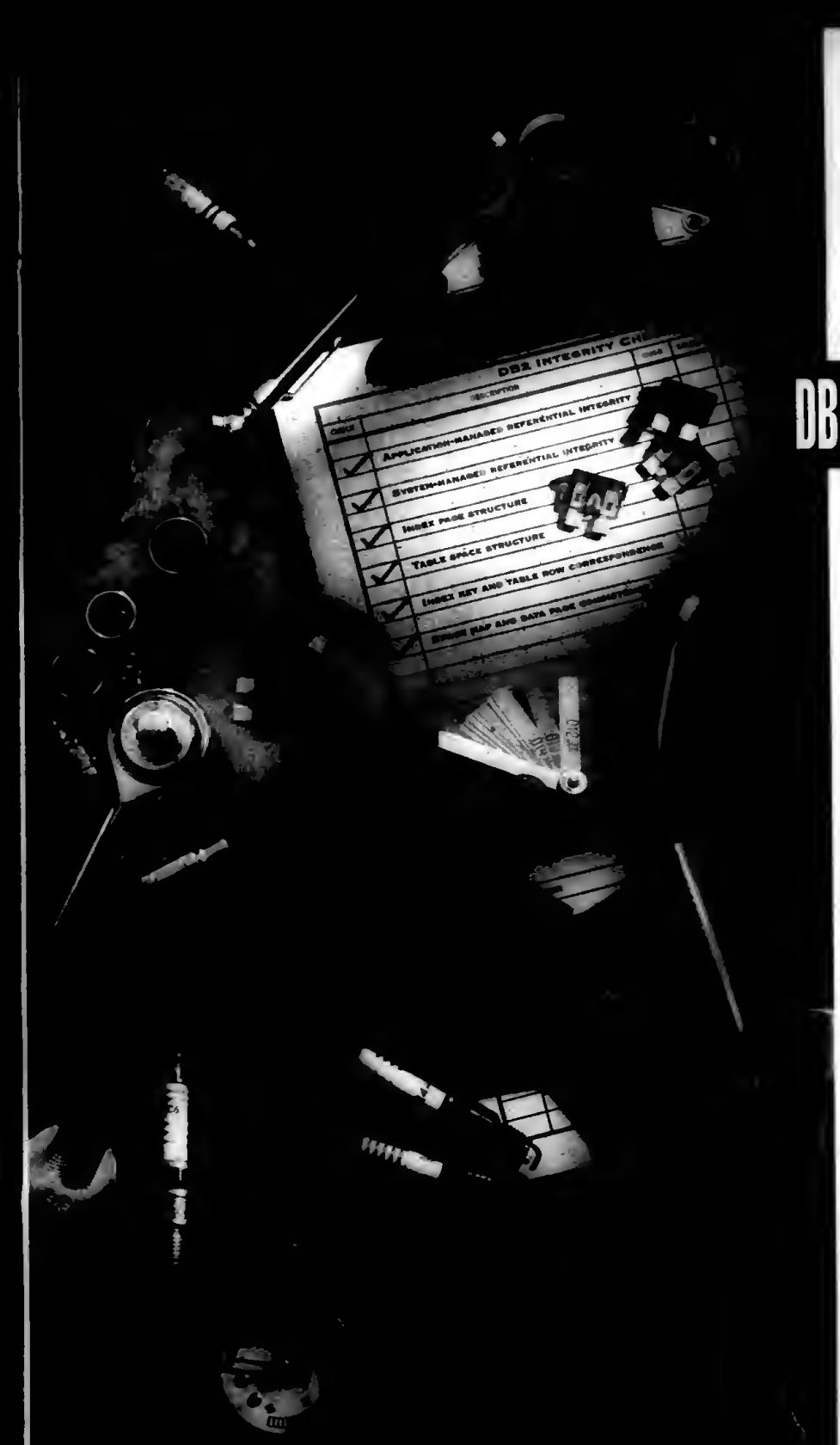
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Access

CONTINUED FROM PAGE 1

from this," said Chris LeTocq, an industry analyst at Computer Intelligence/InfoCorp. As an example, he cited the strong surge in Approach sales.

Unlike Access, Approach is a purely end-user database designed to query SQL databases. It does not include a programming language, but Lotus is working on extending Approach's capabilities by marrying LotusScript, a visual derivative of Basic, to Approach.

"If you want IS to standardize on a database, you have to let them know that there isn't a ceiling. You have to give them some head room with a programming language," LeTocq said.

Access, meanwhile, uses a derivative of Microsoft's Visual Basic as its programming language. In the latest version, which just entered beta testing, Microsoft is adding additional Wizards to further automate queries and other functions, according to sources.

Users will also have the ability to execute stored procedures on SQL Server and will receive a search engine called Rushmore, which will speed up queries made against large tables. Rushmore is a technology Microsoft originally deployed in FoxPro.

However, while support for stored procedure calls will improve Access' ability to function as a front-end query tool for SQL databases by cutting down on network traffic, some analysts and consultants said they feel it is not enough to increase the database's role in robust client/server applications.

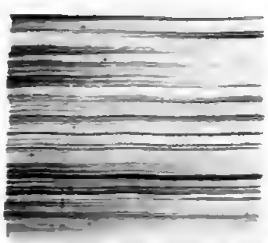
"Access 2.0 will be a lot snappier to use, but it's still a stand-alone PC database," said Daniel Grant, president of Tangent International Computer Consultants, Inc. in New York.

"For client/server today, most people are using Visual Basic or Powersoft. In terms of client/server, Access is an abomination. Access wasn't designed with client/server in mind," said Rich Finkelstein, president of Performance Computing, Inc.

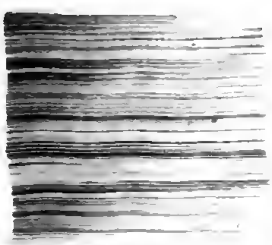
Microsoft group product manager Mary Engstrom declined to comment on Access 2.0 but said the database's role in client/server applications will evolve beyond that of a query tool as Microsoft moves forward on integrating Visual Basic with Access.

In addition, Microsoft ultimately plans to merge the database engines for Access and FoxPro to make it easier for developers to create applications that run across multiple databases.

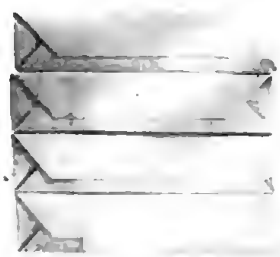
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Opening Windows

Looking to shore up its client/server capabilities, Borland last week agreed to acquire a provider of reporting and querying tools. The transaction will be recorded as a stock swap involving 1.2 million shares valued at $18 million.

Based in San Mateo, Calif., ReportSmith, Inc. (formerly Indigo Software Corp.) provides a report writer that Windows users can employ against SQL databases to create reports that can then be edited and formatted locally. ReportSmith supports Object Linking and Embedding 2.0.

The deal will allow Borland to better position itself as a provider of client/server applications that can access SQL databases, said Borland Chief Technology Officer Richard Swartz. In general, PC software vendors are trying to position their products as query tools for client/server applications in competition with traditional data access tools [CW, Nov. 29, 1993].

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Technical service

WordPerfect limits free support for applications

By Michael Vizard

Bowing to the economic pressure brought on by a bruising PC software price war, WordPerfect Corp. has fallen in line with the rest of the industry by curbing its free support program.

The company last week announced that it will only provide free technical support to registered users of its products. In addition, registered users will only receive free support for 180 days for business applications and 90 days for workgroup applications.

The free support period is longer for business applications because workgroup applications are inherently more complex and expensive to support, according to WordPerfect Chief Executive Officer Ad Rietveld.

Previously, WordPerfect had built a reputation for offering highly regarded free support. But most PC application vendors, including Microsoft Corp., Lotus Development Corp. and Borland International, Inc., have been moving to paid support models. WordPerfect's latest moves bring it in line with the rest of the industry, said Carter J. Luscher, an industry analyst at Gartner Group, Inc. in Stamford, Conn.

Too late for some

Large information systems shops committed to WordPerfect were nonplussed over WordPerfect's latest move because most IS organizations already have signed up for paid maintenance programs or have developed their own internal support programs.

"It [will have] a minimum effect because ... we very seldom have users calling outside for help," said Tom Carsoo, director of MIS at Zale Corp. in Irving, Texas.

"We already decided to sign up for one of the paid support programs. If it's good support, it's worth some money," said Harris Tilevits, director of technology at Skadden, Arps, Slate, Meagher & Flom, a law firm in New York.

Small customers beware

Luscher recommends, however, that smaller IS organizations, which have previously counted on free PC software support, take time to reevaluate their cost structures.

"There's still a significant number of people who underfund their internal technical support because they count on free support from the vendor. The perception from executives is that support is free so they won't pay for it. Now they have to realize that there is a price tag attached to support," Luscher said.

As part of its latest support move, WordPerfect will offer a fee-based Priority Service that gives access to technicians for $25 per incident, $2 per minute for business applications or $150 per incident for workgroup applications.

WordPerfect also has a $2,500-per-year Silver Support program for small to medium-size businesses with 50 to 300 users, a $10,000-per-year Gold support program and a $15,000-per-year Platinum support program that has various levels of support in terms of availability of technicians and response time.

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Mainframe consolidations

Retailer opts for West Coast data center

By Jean S. Bozman
DUBLIN, CALIF.

American Stores Co., a $19.1 billion retailing conglomerate, is swimming against the tide by consolidating its mainframe operations in the earthquake-prone San Francisco area.

The company recently confirmed that it will move operations from two Chicago-area data centers to a single IBM mainframe center operated by its Lucky Food Stores, Inc. unit here. The move to this San Francisco suburb, planned for April, counters a trend by local firms to move mainframes away from the fault line since the 1989 San Francisco earthquake.

The trend for California data centers is to stay out of the seismic zone, which runs the length of the state, and to avoid the aging infrastructure of Los Angeles, said John Jackson, executive vice president at Comdisco Professional Services, Inc. in Rosemont, Ill. "I've seen the focus [for relocation] on Denver, Dallas and Phoenix in the last two years," he said.



Pick of the bunch

Despite the looming specter of an earthquake, American Stores said it selected Dublin as its main facility because it is the most modern of its three data centers and would be the least expensive to upgrade.

Though putting its primary processing jewels in one earthquake-prone area is a risky proposition, the company believes it has a more-than-adequate disaster recovery plan for the Dublin center, according to company insiders. The plan includes hot-site support from outside providers.

Moreover, American Stores said it believes the consolidation plan will save money. "As a nationwide company, we must take advantage of [our] combined resources," a company spokeswoman said. "Compared with other facilities, the Dublin site would be the most cost-efficient to upgrade and to meet future needs."

American Stores, like many retailers, is looking for ways to reduce the information systems budget, said Glen Terbeek, a managing partner who specializes in information technology consulting for the food industry at Andersen Consulting in Chicago. "The bottom line [for many chains] is 1% of sales, and they're happy to get that."

Expanding capacity

To handle the increased processing requirements, American Stores plans to double the Dublin center's mainframe capacity, sources said. The center currently houses an IBM ES/9000 Model 900 mainframe running MVS/ESA 4.3, storing 450G bytes (see chart).

But to reduce moving costs, the Dublin center may purchase or lease machines locally rather than relocate them from Chicago, the sources added.

The two suburban Chicago data centers set for relocation are operated by Jewel Food Stores, Inc., in Melrose Park, Ill., and American Drug Stores in Oak Brook, Ill. The Chicago data centers handle data processing for business units in Boston and Philadelphia.

American Stores also plans to consolidate its application development at a new software center near its Salt Lake City headquarters. Currently, local software development is handled by Star Market Co. in Cambridge, Mass., and Acme Stores in Philadelphia.

American Stores did not say how many IS staffers, including data center operators and programmers, would be affected. But there are at least 200 IS staffers in the Chicago area, the company said. Sources said they believe many will either lose their jobs or be retrained. Some observers said the Dublin facility already has roughly the number of staffers needed to handle the combined mainframes.

No IS employees at American Stores would speak publicly about the consolidation, citing corporate policy. However, some suggested that the Dublin move may eventually be followed by another, to Salt Lake City.

"It's a lot easier to move one data center than three," said one company source, adding that at least the California site is closer to the Utah headquarters. The company declined to comment on its intentions.

American Stores Co.

- Headquarters: Salt Lake City
- 1992 revenue: $19.05 billion
- 1992 profits: $206.3 million
- Owns: 1,670 retail stores in 27 states
- Employees: 133,000

CURRENT DATA CENTER INVENTORY:

Jewel Food Stores, Inc.
Melrose Park, Ill.
IBM ES/9000 Model 500, IBM 4381

American Drug Stores
Oak Brook, Ill.
IBM 3090 Model 600J

Lucky Food Stores, Inc.
Dublin, Calif.
IBM ES/9000 Model 900,
450G bytes total disk capacity

Subsequent benefits

The data center consolidation plan may also pave the way for the future, Terbeek said. For years, most chains routinely gathered point-of-sale (POS) scanner information in mainframe databases for trend analysis. But stores like American Stores' Jewel chain are beginning to use Unix systems to capture the same POS data in local databases so that shelves can be restocked with hot-selling items.

Information is going to move closer and closer to the store, Terbeek said. "We're past the days of sucking up POS data every day and loading it on a central file."

Microsoft seeking expanded X/Open role?

By Jean S. Bozman

Microsoft Corp. last week said it might be willing to play a bigger role in X/Open Co. if the open systems standards body agrees to change its format to address Microsoft's concern that it is a Unix-only organization.

Possible areas for agreement between the two parties include "document interchange formats, some things related to objects and networking protocols," said Bob Kruger, director of systems marketing and standards at Microsoft's systems division.

Universal standards

"There are more than 40 million Windows systems out there, and two million or so Unix systems," said Microsoft's Bob Kruger. "You have these standards that apply to Unix, and why should you, the other 40 million people, get compliance in an unnatural way?"

Feeling the pressure

Microsoft, which has been a member of X/Open's independent software vendor council for five years, cited pressure from large corporate-user sites to consider expanded participation.

"The whole idea is that [X/Open] really has to be, and be perceived as, something that is beyond Unix, that is truly open and platform-neutral," Kruger said.

X/Open has said that not all X/Open standards are Unix-only, including its XPG3 and XPG4 brands. For example, Digital Equipment Corp.'s OpenVMS operating system is XPG4-compliant.

Bob Lewin, vice president of marketing operations at X/Open in Menlo Park, Calif., confirmed the latest round of talks. "We've said to Microsoft, 'What are some of the things you'd like to see to make yourselves more comfortable?'" Lewin said. "Let's start with a clean slate."

Sources said one stumbling block may be the "X" in X/Open's name, which is associated with Unix. Another may be X/Open's recent challenge to Microsoft that it submit its Windows interface as an X/Open standard.

Microsoft, however, is not seeking X/Open's stamp of approval for evolving Windows NT standards, which are well-documented, Kruger said.

X/Open Corporate Board

X/Open Co. board members include the following: Amdahl Corp., Compagnie des Machines Bull, Digital Equipment Corp., Fujitsu Ltd., Hewlett-Packard Co., Hitachi Ltd., IBM, ICL Ltd., NCR Corp., NEC Corp., Ing C. Olivetti & Co., Oki Electric Industry Co., Siemens/Nixdorf AG, Sun Microsystems, Inc. and Unisys Corp. Novell will soon join the board, X/Open officials said.

While ongoing discussions between Microsoft and X/Open accelerated at last month's X/Open conference in Rome, members of X/Open's User Council are lobbying both parties to work more closely together as users in large information systems organizations move toward distributed computing on a global scale.

"Getting two products to work together flawlessly takes more effort than it should today," said Gordon Kerr, senior vice president of MIS at Hyatt Hotels and Resorts, Inc. in Chicago. "It's extra money out of my pocket that I'd rather spend to solve customer problems."

Users said Microsoft's role should match its market clout. "I think most of the users certainly believe that Microsoft controls most of the desktops and should play a more active role in the standards process," said Terry Retter, a senior manager at DHL Systems, Inc., the IS arm of DHL Worldwide Express in Burlingame, Calif.

Net gains

A board-member role for Microsoft would net X/Open more than $560,000 and a lot of technical expertise. It would also dispel the notion that X/Open is purely a Unix advocate, after gaining the Unix trademark from Novell, Inc. in September, and broaden X/Open's impact on computer standards.

"I think what the users would like to see is for Microsoft to come in and be a full-fledged stockholder [and board member] of X/Open," said Dennis Brown, chairman of the X/Open User Council and a vice president at systems integrator PRC, Inc.

"What we need to do is to convince Bob Kruger and other senior-level people at Microsoft that X/Open is more than Unix. I think the positive thing is people are talking and talking very frankly. People seem to have their concerns on the table," Brown said.

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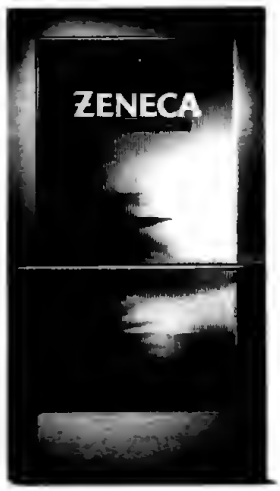
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Briefs

Sequent estimates

Sequent Computer Systems, Inc. in Beaverton, Ore., said its revenue for the fourth quarter ended Jan. 1 will be roughly $104 million. Revenue for fiscal 1993 was estimated at $353 million. Operating earnings for the year are expected to range from $13.9 million to $15.6 million. Results will be announced Jan. 25. Sequent said it will lay off 5% of its worldwide work force and take a restructuring charge — $15 million to $20 million — against 1993 results to cover costs for the layoffs and reorganization.

Kendall to restate

Troubled Kendall Square Research Corp. in Cambridge, Mass., followed up recent reports of financial irregularities and the replacement of many key executives by naming Coopers & Lybrand to replace Price Waterhouse as its independent auditors, following a fee dispute with the latter. Coopers & Lybrand is expected to restate Kendall Research's 1992 numbers, which were already restated once last fall.

SHL revenue up

For its first quarter ended Nov. 30, Ottawa-based SHL Systemhouse, Inc. reported revenue of $267.5 million (Canadian), up 33% from the same period a year ago. Net income for the period was $4.7 million, compared with $300,000 a year ago, the systems integrator said.

SHORT TAKES Central Point Software, Inc. in Beaverton, Ore., purchased LANlord, the workstation management product from Microcom, Inc., for an undisclosed amount. . . . Vmark Software, Inc. said it will buy Constellation Software, Inc., a privately held developer of object-oriented client/server interoperability products. . . . Platinum Technology, Inc. said it will acquire database tool maker Datura Corp.

Boom year seen for high tech

By Gary H. Anthes
WASHINGTON

The computer industry should enjoy a boom year in 1994, with most segments posting double-digit growth in sales, according to a U.S. Department of Commerce report.

But that rosy picture will be scant comfort to the 10,000 workers expected this year to depart the hardware sector, which is expected to endure its sixth consecutive year of declining employment.

The Commerce Department said its bullish projections, outlined in its 35th annual "U.S. Industrial Outlook," are based on several trends. These include a moderately improving economy, recent trade agreements, the relaxation of export controls, further deregulation of the telecommunications industry and fallout from the government-sponsored "data superhighway."

Faster times two

According to the report, the major components of the industry (see chart) will grow from two to five times faster than the economy as a whole, which is said will move up 3% in terms of gross disposable product. Even a relatively modest 6% projected growth in dollar volume for hardware and peripherals is more bullish than it seems because a large increase in units shipped is partially offset by falling prices.

The Commerce Department said growth in data processing and network services will be especially strong because it will be propelled by an expansion in electronic commerce and a flow of new services related to computer mapping, airline ticketing and toll processing. Growth will remain at 14% per year for the next five years, with health care reform and the national information infrastructure making important contributions in the later years.

Jeffrey E. Garten, undersecretary of commerce for international trade, hailed the computer and automotive sectors as highlights of the 1994 economy. But he said the rosy projections for those and a few other sectors will not be matched by employment gains.

A healthy clip

1994 worldwide growth projections for selected U.S. industries (Dollars are in billions, not adjusted for inflation)

	1993	1994	Percent increase
Electronic information services	$13.6	$15.6	14.7%
Data processing and network services	$46.4	$53.6	15.5%
Computer professional services	$60.8	$66.7	9.6%
Hardware and peripherals	$56.3	$59.7	6%
Packaged software (U.S. market)	$32	$36.1	12.7%

Sources: U.S. Department of Commerce, Washington; International Data Corp., Framingham, Mass.

"The economy is not generating enough jobs," Garten said. "The disappointing job performance is due to massive restructuring in U.S. corporations and the wind-down in the defense sector."

Indeed, hardware manufacturers will see total employment drop from 200,000 to 190,000 this year, following a drop of 15,000 jobs last year. Most of the lost jobs will be in administration, sales and technical support, the Commerce Department said.

While export opportunities will be better than ever — thanks in part to a relaxation in export controls and improving economies overseas — the computer trade deficit will increase from $13 billion to $17 billion, most of that in peripherals and most from Japan, the report said.

Good guesstimates

"The [Commerce Department] numbers look conservative," said Neeraj K. Vohra, computer analyst at Standard & Poor's Corp. in New York. He said the projections were in line with or somewhat below those forecast by S&P.

Vohra echoed the prediction that overseas sales will rise sharply this year, the computer trade deficit notwithstanding. He said the North American Free Trade Agreement, rapidly growing markets in Latin America and the Far East and a potential economic recovery in Europe will all present opportunities for U.S. firms. Vohra said sellers of software and networking products — where the U.S. has "a huge lead" — will prosper.

The Commerce Department said the market for packaged software in Japan, Asia and Latin America will grow 19% to 21% this year. It also said sales of LAN equipment to Europe will rise 14% overall, with sales of routers jumping 37%.

Client/server development tools

Visigenic eyes red-hot market

By Kim S. Nash
SAN MATEO, CALIF.

Start-up firm Visigenic Software, Inc. plans to break into the red-hot graphical client/server development tools market early next month wielding two key differentiators: language independence and preservation of old-line Cobol programmers.

But that effort, guided by Roger Sippl, former chief executive officer and cofounder of Informix Software, Inc., will not be easy.

The market is already crowded with established tools from companies such as Microsoft Corp., Gupta Corp. and Powersoft Corp. Moreover, database makers such as Oracle Corp. and Sybase, Inc. have vowed to grab a piece of the pie by releasing their own object-oriented and Windows-based products this year.

V/Forms, 11-month-old Visigenic's first product, is due out in March if all goes well, with beta tests slated to begin next month. Test sites have not been chosen yet, but the company is working with Informix to find a half-dozen companies in the banking, service and manufacturing industries, among others.



Roger Sippl: *V/Forms targets Informix's graphic weakness*

V/Forms is targeted at information systems application developers rather than end users. Like tools from Gupta and Powersoft, V/Forms is a form and screen painter that is equipped with preprogrammed buttons and icons such as Search, Modify and Delete. Unlike rivals, however, Visigenic's product lets developers add their own functions without having to learn a proprietary programming language.

For example, the first iteration of V/Forms was designed to let Informix users build graphical applications using the Informix-4GL language. Informix's product line lacks a graphical tool similar to V/Forms, "which is partly why we targeted that environment first," Sippl said.

The company plans similar editions of V/Forms for Micro Focus, Inc.'s Cobol and various versions of C and C++ languages, all of which Sippl promised for this year.

V/Forms may sound like a product Informix users have been waiting for, but the young company must overcome the doubts of users who may hesitate to buy products from an unproven firm, said Fred Hubbard, president of the Northern California Informix Users Group.

Visigenic's $5.5 million in funding came from Sippl's own pockets as well as Silicon Valley venture capitalists, including Sequoia Capital and Weiss, Peck and Greer, according to a spokeswoman.

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By the numbers

Until last summer, public release of the eagerly awaited quarterly financial results from IBM was done this way: First, the auditors and bean counters would sign off on the results. A senior public relations person would then draft a press release replete with quotes from the chairman. Then, approximately 30 to 40 IBMers — many of them senior officials — would nitpick the release before granting final approval.

When IBM releases its year-end figures next week, the press release will have been prepped by the PR person, OK'd by Chairman Lou Gerstner and that's it.

This change isn't going to get a more open AS/400 delivered to you soon, and it won't articulate a clearer desktop strategy from IBM. But it does show that someone is finally attacking bureaucracy at IBM. Someone is making an effort to rout out the malaise that has caused a giant to shrink in size — and in the hearts and minds of customers around the world.

That someone is Louis Gerstner. Last week he gave us a glimpse of his plans in a wide-ranging interview (see story page 1).



From all indications, he's a pugilist in a knockdown, drag-out bout. Not with competitors, but with IBM itself — at least the IBM that customers have known for decades. He's also fighting skeptics at all levels who question his ability as an industry outsider to recast the company he joined last April.

Gerstner is attacking with familiar tactics. No, he doesn't think IBM's technology is the problem, rather its principal strength. Customers, he says, tell him that. So he's de-densifying IBM's entrenched management thicket, assuming the key to converting IBM's technology to customer solutions lies in making IBM's divisions work with and not against one another. If successful, he'll get a hallelujah from customers.

But he was very short on details as to how this would happen. Here, as with other issues addressed in the interview, Gerstner was almost Ross Perot-like. Plenty of determination and plenty convincing. But just how will it get done?

For one thing, he's boldly repudiating the skeptics by bringing in other outsiders, including Richard Thoman, who will run the $12 billion PC division.

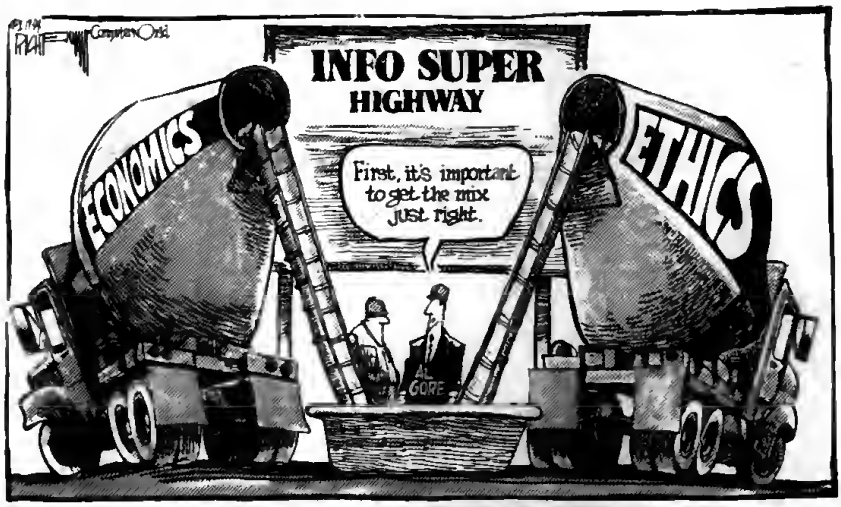
He's not technoid (though he does have the buzzwords down), but he knew enough to unite the key IBM platforms from workstation to mainframe under a single unit with the hope of promoting a more consistent client/server direction.

Gerstner is acutely aware that the hallmark of IBM — customer service — has become an oxymoron in some quarters. A bold headline in a recent in-house IBM publication asked employees, "How arrogant are we?" But again, he came up short on details.

He's got plans with details, no question. You can see that by the buttons he's already pushed, sort of quietly without preannouncement. After nine months of bailing and patching holes, he's making serious changes to business as usual. I just question if he understands how restless IBM customers are and how immediate their many neglected needs are.

Bill Laberis

Bill Laberis, *Editor in chief*



Peace dividends

Regarding "Object wars" [CW, Dec. 6], Component Integration Labs (CIL) is *not* at war with the Object Management Group (OMG).

In fact, CIL is concentrating on document linking, an area in which OMG has just embarked. Further, OMG has more than 340 members and is growing at the rate of two companies per week, not the 100 members described in the article.

Who will dictate object interfaces? OMG will reach its conclusions by consensus of the industry. Microsoft is welcome to participate in that process, but the ultimate decision lies with the users.

Christopher Stone
President and CEO
Object Management Group, Inc.
Framingham, Mass.

Highest-ranking left out of ratings

Regarding The CW Guide to Mainframes [CW, Nov. 29] on maximizing data-center automation: in the area of automated output/report distribution, which is a significant feature of your article, Software Engineering of America is one of the most visible players.

Software Engineering is ranked No. 1 over all other report distribution systems by the Xephon User Survey on Report Distribution and ranked No. 1 in user ratings for report distribution by Gartner Group, Inc.

In addition, there are more than 8,000 licensed users for whom Software Engineering software improves system availability, and Software Engineering continues to introduce new and enhanced systems software solutions that have beneficial impact, not only for MVS but enterprisewide.

On the PC front, Software Engineering is about to introduce KEYS/PC, Automated Help Desk Management for Windows, DOS and LANs. Users will be able to integrate data with the existing host-based versions.

Software Engineering feels that its role in all of these areas that optimize mainframe utilization should have been mentioned.

Philip M. Sussman
Software Engineering of America
Franklin Square, N.Y.

Parallel processors right on schedule

Regarding "IBM buys time" [CW, Dec. 6], Harold Lorin predicts "the end of the 390 chapter" as the world turns to Unix.

As head of development for both S/390 (MVS) and SP (Unix) parallel processors, I would like to point out that both MVS and Unix have been around for the past quarter of a century and we do not see either of them going away soon.

The introduction of CMOS-based S/390 parallel processors is on schedule. We are fully committed to a cost-competitive S/390 platform that works easily with other platforms in a client/server environment. It is neither a delay tactic nor a stopgap measure before our customers migrate to other platforms.

Nicholas M. Donofrio
IBM
Hopewell Junction, N.Y.

Cobol and objects not a savory mix

Those who hope that object-oriented Cobol will preserve their investment in staff simply because it uses Cobol syntax, as reported in "Object-oriented Cobol to hit streets" [CW, Dec. 20], are likely to be disappointed.

The approach associated with Cobol programming is utterly antithetical to object-oriented programming, which emphasizes abstraction and encapsulation.

Furthermore, the programmers who gave us those millions of lines of Cobol spaghetti will find, in inheritance, a whole new dimension for mischief.

Andrew Raybould
Jersey City, N.J.

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Just say NO to documentation

David Lee Russell

After having spent nearly 20 years in the IS profession, I find it absolutely comical that there are still fools out there telling us that if we don't "document" our systems and processes, the sky will fall.

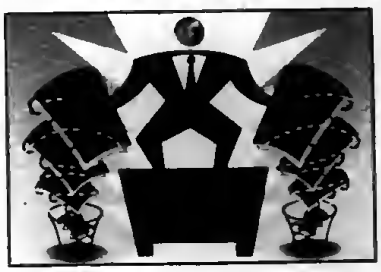
My experience has shown that the sky will not lower one bit if you don't waste your firm's time and money acquiring or creating and maintaining all that documentation.

The simple truth is that what doesn't get documented probably doesn't need to be documented.

If you've found that your staff and users function well enough with limited documentation, then congratulate yourself and your staff for a job "not done."

I propose we revise our present doctrine and turn to a new philosophy, which I would call "Natural Documentation."

Some of the tenets of Natural Documentation are as follows:



- Documentation is appropriate only if there is no simpler or more practical method of gaining knowledge of the system or process function.
- Documentation must provide short, quick and to-the-point information.
- Documentation should be as graphical as possible.
- Documentation must be made available only the instant it is required and not one second before.
- Documentation has a rather short half-life and becomes worthless very quickly.

It is interesting how we have all been conditioned to believe that documentation is like "apple pie and motherhood." Just reading this article is probably causing you some twinges of professional guilt, as if simply thinking about cutting back on documentation were a mortal sin.

Who made us feel this way? "Neat" internal auditors, misguided purist managers and "high-born consultants" are all likely suspects.

But let's face it, no stockholder-owned company ever made a better margin by having better-looking documentation filling once-useful shelf space. When was the last time your organization decided to purchase a new software package based on the quality of the documentation? The answer, never.

How valuable?

Certainly some documentation has value. The real issue is how much of it we need. For most systems today, the most practical documentation consists of on-line help screens, a simple on-line tutorial and maybe a short training guide with a few samples. More than this is overkill.

To prove my thesis, just look at your personal shelf space. I would venture to guess that 80% of the documentation you have there is useless to you or anyone else. Each document was probably reviewed only once (when you were in training) and is now out of date.

It's time to admit that, when it comes to documentation, less is best. Retrain the documentalists for some useful job and go forth into the world without all those aging manuals and without guilt.

Russell is MIS director at Springs Window Fashions Division, Inc. in Middleton, Wis.

Beware the Notes killer

Patricia B. Seybold

Lotus' Notes is clearly the right product at the right time. As companies migrate to PCs and LANs, they need a LAN-based work environment that fosters fast and democratic development of applications that can be shared across entire organizations and used seamlessly by workers, no matter where they are. Notes does all that and more.

Question is, if Notes is so great, why has the ramp-up been relatively slow in most organizations? Why does it take most companies two to three years to make Notes part of their organizational infrastructure? Why does it not "take" at all in other organizations?

There are two dimensions to the Notes assimilation problem. One is technical. The other is organizational. Both are thorny.

On the technical side, one thing that makes Notes hard to implement is its high administrative overhead. You really need a Notes administrator at every site with a Notes server, and the learning curve for administrators is steep. Yes, you can get the servers up and running, and they'll stay up. The tricky part comes when you are constantly adding new replication partners — other departments and organizations with which you want to do business electronically.

Mail gateways can be problematic as well, and directory synchronization across Notes and non-Notes E-mail is only a gleam in Jim Manzi's eye.

Another technical and procedural challenge has to do with managing the application development process. Because Notes is a fairly complete applications development environment, end users and departments will roll their own.

> Implementing Notes can be technically difficult, but it is the organizational adjustments that are most likely to trip you up.



But, there are no explicit tools for managing multiuser development in Notes — there's no real data dictionary, for example. This creates a real quandary: Withhold support for end-user development and you'll slow assimilation and cripple the effectiveness of Notes. Let development run wild and you'll wind up with incompatible data definitions, shaky applications and a lot of duplicate problem-solving effort.

Secret to success

These problems are tough, but not insurmountable. It's the organizational side of the equation that is more often the real showstopper. There is a certain art to a successful Notes implementation. Here are some tips:

First, avoid the temptation to roll out Notes as E-mail. It's probably not a better E-mail solution than what you now have in place. There's not enough value-added. A far better use for Notes is the redesign of a critical business process that cuts across departments and organizations.

In this context, it can help you get key stakeholders involved in the design process and provide the means for continuous improvement of the resulting application.

If you are looking for quantum leaps in organizational effectiveness, implement a business process that involves and integrates your key customers.

The constant direct customer feedback and involvement is guaranteed to change your organizational culture from one of functional segmentation and information hoarding to one of cross-functional collaboration and information sharing.

That critical shift in corporate culture to a collaborative, information-sharing culture is, in my opinion, the hardest one to pull off in any organization and it is the real Notes killer.

Seybold is president of the Patricia Seybold Group in Boston. Her Notes address is Patricia Seybold @PSOCG. Her Internet address is PSeybold @MCImail.com

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Enrico Caruso

Etta James

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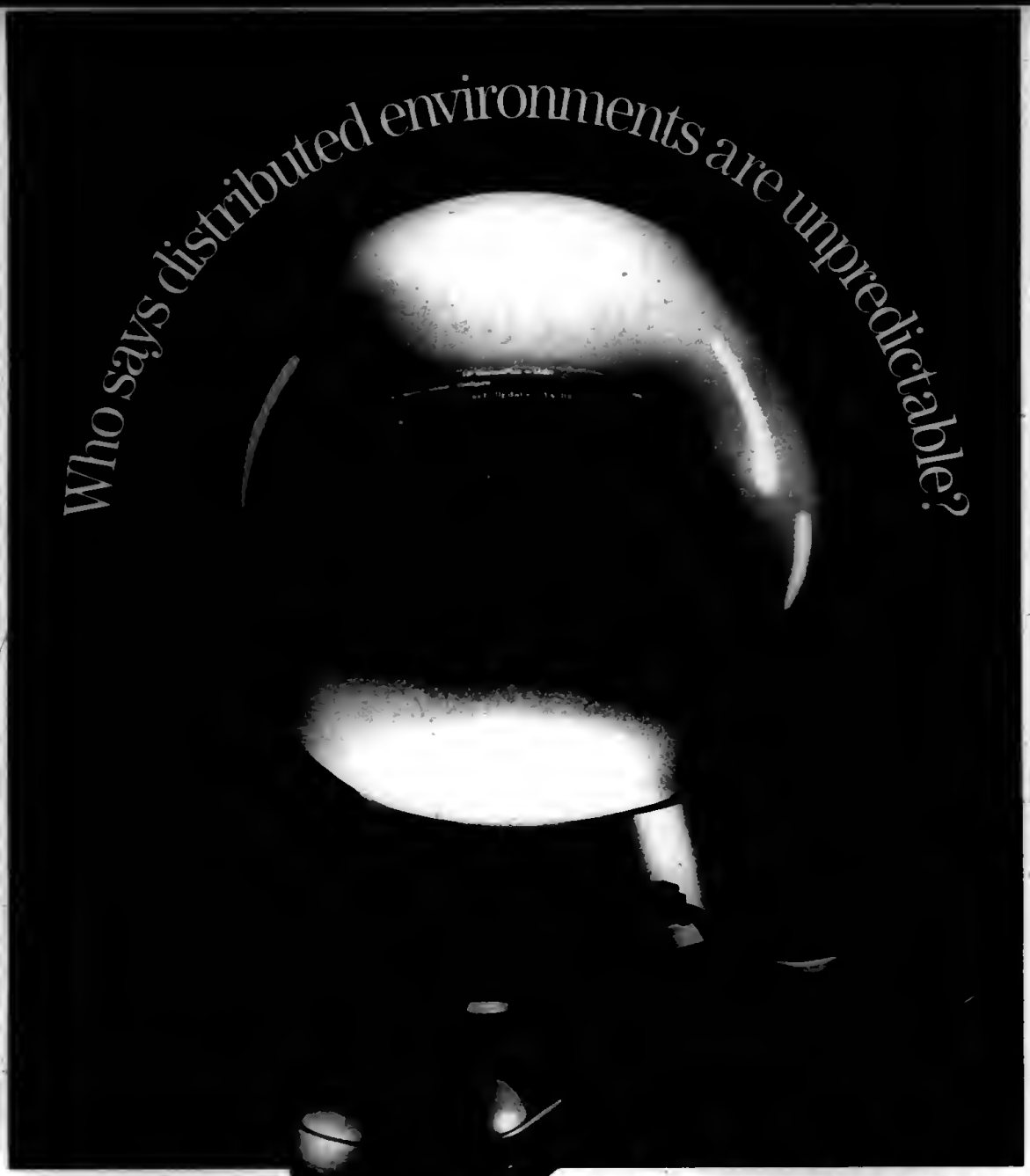
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Disk growth shows 500M bytes not so big

By Michael Fitzgerald

■ There is a bit of trouble brewing at the high end of the PC hard-drive market, largely because the AT bus continues to foil prognosticators by refusing to shrivel up and die.

The AT bus, a basic data-transfer path that has been in existence for almost a decade, cannot support a hard drive larger than 528M bytes. When the AT bus was released in the IBM PC AT in 1984, the need for a 528M-byte hard drive seemed farfetched.

Today, however, "it is very common for high-end multimedia systems to require more than that," said David Tang, a marketing manager at hard drive maker Seagate Technologies, Inc. in Scotts Valley, Calif.

While the AT bus' 528M-byte limit does not render bigger drives unusable, they cannot hold more than 528M bytes of data. Use of a compression utility to maximize storage capacity is unaffected by the limit because the BIOS still thinks the drive is smaller than 528M bytes.



A 500M-byte hard drive *may not satisfy all users' needs*

Bigger is better

Salomon Brothers, Inc. expects a migration from today's mainstream capacity of 170M bytes to 270M-, 340M- and 420M-byte drives and notes that Compaq Computer Corp. plans delivery this year of a drive with 540M bytes.

The tropical fish maxim

While it may seem silly to think of the average user's having a 528M-byte hard drive, analysts said the economics involved dictate that 500M-byte drives will be priced at the same level as 340M-byte drives later this year. This means that systems vendors will probably move to offer them as a standard by year's end.

"I've worried about whether a gigabyte on the desktop is complete overkill, but the dynamics of the industry are like a tropical fish in a fish tank: It'll grow as big as it can within that tank, and when you get a bigger [tank], it'll grow to fill that one, too," said Phil Devin, an analyst at Dataquest, Inc. in San Jose, Calif.

Tom Balzarini, PC coordinator at Associated Grocers, Inc. in Seattle, agreed that a 500M-byte hard drive "sounds kind of stupid when you think about how you used to say 'I'd kill for a 40M-byte hard drive,' but it's a matter of cost. The difference between a 200M-byte drive and a 500M-byte drive is $153, so it's pointless to buy 200M-byte drives anymore."

Micropolis Corp. markets a trick solution of sorts in the form of a 1G-byte drive that is partitioned into two 528M-byte pieces. The system treats that drive as two separate hard drives, which is the maximum the AT bus supports.

Devin said the best-selling drive in 1993 was a 170M-byte drive, but by year's end 210M-byte drives had taken over as best-sellers, and prices continued to fall. He predicts a 1G-byte drive will sell at high-volume pricing during 1995.

AT bus holds on

The AT bus has kept up with the demand for bigger disks better than anyone may have thought. Tang said that while one alternative, SCSI technology, looked as though it would replace the AT bus, that has not been the case. The AT bus has managed to keep pace with SCSI through significant enhancements.

Seagate held a technology conference at Comdex/Fall '93 to discuss the AT bus limitation as well as the issue of supporting more than 8.4G bytes of storage for a system. Partly resulting from that conference, BIOS maker Phoenix Technologies Ltd. in Norwood, Mass., has begun shipping a new BIOS that does accommodate bigger drives, using a Western Digital Corp. development called extended drive parameter tables. The development also lets the AT bus recognize more than two drives. Phoenix is sharing its technology with other BIOS makers.

System Engineer updated

Gives users direct access to all Windows INI files

By Stuart J. Johnston

An updated Microsoft Corp. Windows utility lets users make changes to their systems — including in initialization files — from a single, familiar interface.

System Engineer 2.0 gives users access to all of Windows' INI files by replacing Windows 3.1's Control Panel, said Howard Sobol, president of the Windows Users Group Network (WUGNet).



The package, which is shipping from Media, Pa.-based WUGNet, costs $49.95.

In addition, users will receive System Engineer 2.0 when they join WUGNet, Sobol said. Membership, which costs $99, includes six issues of the organization's newsletter, "Windows Journal," electronic versions of Microsoft's Windows Resource Kit and access to WUGNet's CompuServe forum.

Upgrades from 1.x cost $19.95 for WUGNet members and $29.95 for nonmembers.

System Engineer provides direct access to all Windows INI parameters, including many undocumented ones such as the ability to change Windows Help screen colors. It can also be used to monitor and free up memory that some Windows applications fail to release once they are closed.

"It eliminates all the holy mysteries of Windows [and] you think, 'Why didn't Microsoft distribute this with Windows?' " said Jared Sherman, a New York-based consultant who specializes in electronic prepress systems.

Running faster

With System Engineer 2.0, "the average user could spend an afternoon and come out with a machine running 20% to 30% faster and get rid of a lot of [General Protection Faults] in the process," Sherman added.

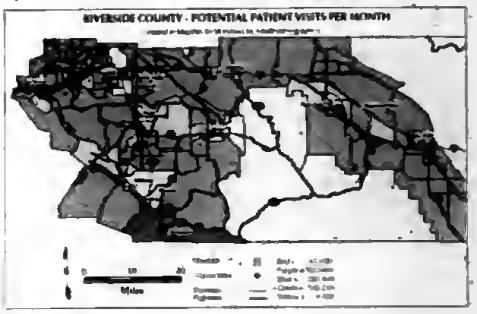
"It's really easy to use and lets you control things that the Windows Control Panel doesn't," he said.

System Engineer, *page 40*

Mapping impacts health care

By Michael Vizard

With pressure from Washington mounting, the health care industry is starting to reevaluate just about every business process it undertakes. To get a better handle on their prospective customer base, many health care providers have begun employing desktop mapping systems as part of a campaign to optimize their services.



MapInfo *has created this map of potential patient visits per month for various counties*

Managed care

Currently, most members of the health care industry expect the government to push the industry toward a managed-care model under which insurance carriers or employers will subscribe for specific services directly with health care providers. And to ensure that services are available to potential subscribers, the health care providers are relying on desktop mapping software applications such as MapInfo from MapInfo Corp. in Troy, N.Y.

"Health care services are geographically based, and the industry is moving to a managed-care model that calls for increased oversight of payment and utilization of services," said Mike Chermak, president of Health Demographics, Inc. in San Diego, which markets a managed-care application based on MapInfo. "Hospitals need to figure out what services are used, and customers want to take advantage of bulk purchasing."

Mapping, *page 40*

[redacted]

Carole Patton

Version control for real people



Making IS move to client/server was like asking bankers to let customers access the vaults oo the honor system. Data was pretty safe in a mainframe. But once data could be networked throughout an organizatíon, IS suddenly had to sweat security, fault tolerance and the unknown perils of distributed software environments.

And now, to make matters worse, there are armies of "mobile" users schlepping files home at night on disk or in notebook computers. They take planes, ride trains, telecommute and want to log on and off indiscriminately. How can IS allow for this proliferation without overwhelming the oetwork?

There are solutions in the works — and some potentially unsettling problems. Microsoft, IBM and Digital are looking at Coda, a fault-tolerant, distributed file system developed by researchers at Carnegie Mellon University in Pittsborgh. Coda is an intelligent file system that completely antomates file transfers between node and server and makes updates transparent. Connect to Coda anytime from anywhere and your files are automatically updated

So what's wrong with that? The idea of turniog my files over to an automated network jockey gives me nightmares. There are only 100 or so ways to accidentally overwrite your precious files. I've been known to modify a file at home, modify the original file the next day at the office and wind up with two (or more) versions that need synchronizing.

SmartSync makes it easy

That's why, as 1994 kicks off, my most important software find is a new file synchronization and communications program from Nomadic Systems, inc in Mountain View, Calif., called SmartSync for Windows. This package is essential for anyone who regularly uses more than one PC or who needs to share files and information with other people, particularly colleagues who constitute a distributed workgroup.

Operating SmartSync is easy. You set up initial communications by selecting a default connection. Pick from a list of 100 modems (including Hayes-compatihie or MNP-compatibie modes) or enter yoor own modem string. Serial and parallel cables are provided for those who normally drag a laptop between offices in the same huilding. Next, select the files you want to share and grant access on a directory-hy-directory basis Share files in one directory with people in a workgroup and share files in another directory only betweeo your home and office PCs.

To send files, use the SmartSync interface button that brings op a dialog box for File Manager. Now, go to the access key and bring up your address book. SmartSync can also automatically update ceotral files once you pick the days and times. This means you can update your calendar or personal information manager from home and co-workers can check your schedule. Want to npdate multiple users? SmartSync will sequentially dial everybody on your list. Pick a set of files or directories, select the items you want synchronized and use the pop-up schedoler. Off go yoor files at the day and time you indicated — even on a recurring schedule. Nice for updating something like a price list.

And sending files is easy. Once it's set np, SmartSync requires just one click to establish a connection. Remember the last time you used LapLink? The connection reqnired about 14 steps.

Solves conflict

But there's more. Try tossing SmartSync two versions of a file and a flashing icon indicates a file conflict (no automatic overwriting). Click on this icon and you're in an andit log with the option to restore the older file, create a backup file or create a separate file. SmartSyne also has an Undo command, which allows a user to revert to a previous version. And because only file changes are sent, updates via cellular calls become affordable.

SmartSync began shipping in December and retails for $t69. (A $99.95 introductory special is available for those ordering direct.)

Sure, SmartSync is not as elaborate as Coda. But considering how humans operate, SmartSync was designed from exactly the right viewpoiot.

Patton is president of the Mendham Technology Group in Mendham, N.J., which produces client/server summits for corporate strategists. Her MCI Mail address is 491-4869.

Engineer

CONTINUED FROM PAGE 39

el doesn't," said Jim Blakely, vice president of Blakely-Signature Associates, a Microsoft solutions provider in Bonita Springs, Fla.

"System Engineer is one of the things I carry with me and use on customer systems to tune things np," said Bfakely, who was a beta tester for Version 2.0. "It's supposed to he a Control Panel for the rest of the world and, by and large, that's the best thing about it."

Additional functions

The npdate incorporates Windows Setup and the Control Panel with System Eogineer's capabilities. It adds tabular windows for the SYSTEM and WIN initialization files as well as for system information and for backing up earlier versions of the INI files.

Backup and restore functions also include support for Windows groups, and AUTOEXEC.BAT and CONFIG.SYS files.

Sherman said he especially likes the ability to restore earlier INI files so if changes are not incorporated correctly, he can easily revert to previous configurations.

Version 2.0 also adds OTC Corp.'s Kingoom communications port driver and configuration tool to help users eliminate conflicts caused by muitiple applications that try to access the same communications port, Sobol said.

Mapping

CONTINUED FROM PAGE 39

For example, Baystate Health Services in Springfield, Mass., has been making greater use of desktop mapping software dnring the past year and a half, according to planning analyst Kristin Ritter.

Baystate, which manages a hospital and several medical ceoters in western Massachusetts, had previousiy relied on a geographic information system (GIS) before adopting Mapinfo. But Ritter said the GIS was just too arcane to use, so Baystate moved over to Mapinfo, which eventually turned out to he easier to use and more sophisticated than the earlier GIS.

"MapInfo isn't used to directly contain costs, but it allows us to visually see where the gaps are in our coverage. We also ose it to keep track of where the physician offices affiliated with the hospitals are," Ritter said.

More users

In general, executives at The Travelers Corp. in Hartford, Conn., report that they are seeing an increased use of desktop mapping applications at their customer sites. Travelers has been using desktop mapping software for four years as a tool for marketing its programs to employers.

"We ose it to show customers where our doctors are in relatioo to their employees. People tend to be reststant-to change, but we find there is less resistance to managed care when we can show people that their services are covered. The goal is to minimize disruptions for the employees," said Kathy Eckels, Travelers vice president of the new hosiness market areas division.

Since all of the major insurance companies have adopted desktop mapping software, Eckels said she has noted that employers now use desktop mapping applications to compare the services of differeot carriers.

"It's become a standard part of the quote 'process.' These kinds of applications also help you look at ways to modify the plan for an employer," Eckels said. In fact, Bruce Jenkins, an industry analyst at Daratech, Inc. in Cambridge, Mass., notes that the push to adopt desktop mapping products in the health care industry is a variation of a trend that has seeo marketiog and retail-oriented companies move to adopt demographic analysis tools.

Expanding market

According to Daratech, the marketing/sales component of the GIS market grew 46% in 1993 to $35 million, with MapInfo holding a 25.4% share followed by Strategic Mapping, inc. with a 22.6% share and Environmental Systems Research, inc. with a 20% share.

Overall, the GIS market grew from $378 million to $461 million in t993, Jenkins said.

Driving the move to desktop mappiog applications is the relative cost of desktop mapping applications for PCs.

"It used to be for a GIS you needed a $15,000 system and GIS programmer. These applications now run on standard PCs. Hospitals oeed to position themselves to meet the needs of the community. So the days of taking 30 minutes to get to a facility are over," Chermak said.

HELP LINE



Part of on occasional series of columns aimed ot providing users with answers to technical questions about their software. This week's questions and answers are provided by software services provider Corporate Software, Inc. in Canton, Mass.

Microsoft Corp.'s Windows Version 3.1:

Q: Sometimes if a DOS-based application fails to run from within Windows, the Windows Program Manager reappears before I can read the DOS error message.

Is there anything t can do to "freeze" the error message screen long enough to read the error message?

A: You can suspend the message long enough to read it by creating a program information file (PIF). Use the PIF editor to create a PIF for the application in question.

Make sure the Close Windows on Exit check box is not selected. This forces any error messages to remain on the screen when you run your application.

Try running the application using this new PIF. Read the message when it appears, and address the problem based on the message information.

After you correct the problem, reopen the PIF using the PIF editor and check the Close Window on Exit check box so that you do not have to bother quitting the program manually each time you exit.

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22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data/Tele. Comm. Network Sys. Mgt., LAN Mgr., PC Mgr.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31 Programming Management, Software Developers
41 Engineering, Scientific, R&D, Tech. Mgt.
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70. Medical, Legal, Accounting Mgt.

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❑ Netware (b) ❑ Windows NT (f)
❑ OS/2 (c) ❑ DOS Windows (g)
❑ Unix (d)

App. Development Tools
❑ CASE (h) ❑ C++ (i)

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40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
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70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
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EPA gives public free access to its data

Users can receive environmental info on CD-ROM as well as the Internet

By Gary H. Anthes
WASHINGTON

■ When President Bill Clinton recently instructed federal agencies to make their huge storehouses of information available to the public "easily and equitably," the U.S. Environmental Protection Agency was already onboard.

"The National Performance Review has given tremendous impetus to making government information publicly available," said Brand L. Niemann, a scientist at the EPA's Environmental Statistics and Information Division. "We were ahead of the curve on this."

The "curve" the EPA is on began two years ago when the agency began publishing environmental data on floppy diskettes. A year ago, the EPA started using CD-ROM, and it recently made the data available via the Internet.

The EPA has done much more than simply digitize raw data, although that alone would have been useful. When users get the EPA's "Guide to Selected National Environmental Statistics in the U.S. Government," they get a PC-based package of "hyperlinked infobases."

The package, which is available on CD-ROM or via the Internet free of charge, consists of the following:

• The guide itself, a 100-page catalog of government programs that generate data on topics such as air and water quality, solid and hazardous waste, land use, forest fires, contaminants in fish and wildlife and the like. It describes how the data is collected, where to get it, experts to contact for more information and so forth.

• Summaries by state and year of much of the guide's data, displayed in 400 tables, maps and graphs.

• A runtime version of Folio Views 3.0, desktop publishing software from Folio Corp. in Provo, Utah.

Widespread use

The EPA has distributed at least 10,000 copies of the guide and its associated data so far, not including an unknown number copied from the Internet, Niemann said. Users include students, teachers, business people and government policymakers, he said.

Folio Views, for creating, using and distributing electronic documents, allows users to search for key words and phrases such as "acid rain" or "pesticides."

Hypertext features allow users to jump from a key word or phrase to successive levels of detail on the same topic. Every word is indexed by a proprietary compression technique; a document and its indexes take up just 50% of the space occupied by the uncompressed text, Niemann said.



"Infobases" are dynamic, free-form, single-file repositories that can contain text, numerical tables and images. In the EPA's implementation, text in the guide is studded with colored "link tokens," little double-headed arrows that in effect point to other data sources.

For example, the section of the guide dealing with the EPA's database on hazardous waste sites, states: "The database contains information on the location of over 30,000 sites." The word "location" is preceded by two link tokens. Clicking on the blue token instantly pops up a table showing the number of hazardous waste sites each year for the past decade. The red token brings up the same data in a bar graph.

Further along in the same paragraph, a reference to 1,200 Superfund cleanup sites contains a white link token that can pull in a multicolor map of the U.S. showing the distribution of such sites by state.

The tables and graphs are ASCII files created with a commercial spreadsheet package. The maps are Computer Graphics Metafile files created using desktop mapping software from MapInfo Corp. in Troy, N.Y. The charts and maps can be reused in other desktop publishing, spreadsheet or word processing packages.

Niemann said many users find the guide plus its 400 linked maps and data summaries sufficient for their needs. However, the on-line guide will soon contain pointers to some 50 databases of detailed data available on CD-ROM from the EPA and other agencies. If the user already has the CD-ROM needed, clicking on the appropriate token in the guide will pull in data from the appropriate CD-ROM.

All 50 of the detailed databases will also be available soon on the Internet, Niemann said.

Dear Microsoft,

MacIS wish list

Top 10 requests for Microsoft by members of MacIS

% of votes	Issue
89%	Complete Microsoft Office suite native on PowerPC.
78%	OLE 2.0/OpenDoc: Define Microsoft approach to interoperability; identify approaches for Apple/Microsoft cooperation.
78%	AOCE/MAPI: More information on specific implementation of AOCE/MAPI either in the form of a white paper or a MacIS Task Force presentation.
72%	Reduce the difference in Macintosh product release dates for Office products vs. Windows (preferably less than 60 days).
66%	Tech Net information: Place all Macintosh support and technical information available on Macintosh-formatted CD.
64%	Stand-alone Visual Basic for Macintosh.
63%	Network installation: Provide unattended multiple application network installation capability for Microsoft Office products.
52%	Communicate Microsoft strategy for enterprise migration to non-Macintosh-based mail server.
51%	Cross-platform video standard: Define Microsoft approach to cross-platform video standards (QuickTime vs. AVI).
49%	Interface and features: Get Macintosh user input on technical betas prior to interface/feature freeze for Windows applications.

Response base: 300 users

[redacted]

Software

Symantec Corp. has introduced SuperDoubler 1.0, an integrated compression package for the Macintosh.

According to the Cupertino, Calif., company, the product increases compression speed, control and efficiency by offering the options for automatic transparent compression during idle time as well as manual compression and archiving for user control.

It also offers a background finder and copy and empty trash functions.

SuperDoubler 1.0 costs $109.

▶ *Symantec*
(408) 253-9600

Streetwise Software, Inc. has announced By Design Portfolio, a document enhancement product designed for WordPerfect Corp.'s WordPerfect for Windows 6.0.

According to the Santa Monica, Calif., company, the product allows WordPerfect users to generate designer quality documents directly from their word processor.

Accessed directly from WordPerfect for Windows 6.0, By Design Portfolio offers 70 page designs, including formats for newsletters, faxes, business forms and letterheads.

By Design Portfolio costs $69.

▶ *Streetwise Software*
(310) 829-7827

NEBS Software, Inc. has introduced One-Write Plus 4.0, accounting software.

According to the Nashua, N.H., company, One-Write Plus offers a graphical user interface, pull-down menus and mouse support.

On-line help is provided, and the product has menus that are organized around tasks and labeled with terms such as "Invoice Customers" or "Write Checks" instead of accounting jargon.

The product runs under Windows and requires an IBM-compatible PC with 640K bytes of RAM and hard disk, MS-DOS or PC-DOS Version 3.1 or higher.

One-Write Plus 4.0 costs $69.95.

▶ *NEBS Software*
(603) 880-5100

DataViz, Inc. has introduced Version 2.0 of Conversions Plus for Windows, a PC-Macintosh file conversion product.

According to the Trumbull, Conn., company, the product includes a Macintosh disk-mounting utility and a full-file translator library.

More than 700 file translation combinations for word processing and graphic translators are offered in Version 2.0, and it provides file converters for spreadsheet and database programs.

Conversions Plus also includes the ability to view a Macintosh disk from within DOS, the File Manager or any PC program.

Version 2.0 costs $149.

▶ *DataViz*
(203) 268-0030

SouthBeach Software Corp. has announced PowerAgent, a Macintosh business agent.

According to the Coconut Grove, Fla., company, PowerAgent automatically performs hundreds of different tasks without user supervision or intervention.

Users can automate tasks such as printing reports and lists, updating spreadsheets and creating forms and routing information and documents around the office because the product takes advantage of Apple Compnter, Inc.'s AppleEvents, AppleScript and PowerTalk.

PowerAgent costs $159.

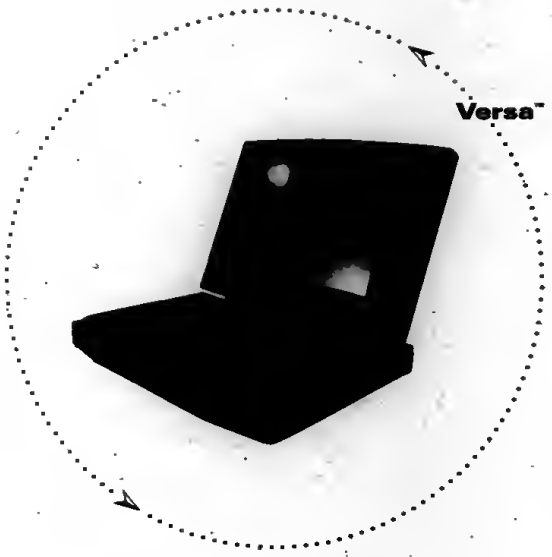
▶ *SouthBeach Software*
(305) 858-8416

Atticus Software Corp. has announced the Atticus RAMDiskSaver for the Macintosh.

According to the Stamford, Conn., company, the background

New products, *page 45*





You are an unfinished book.

A work in progress. A growing stack of unbound pages; the story of all you are, and will be. There are pages devoted to the things you have to do: Edit your report. Work on your presentation. There are other pages full of the things you like to do: Music. Art. Travel. But most are full of ideas that you'd like to share with the world. That you've got to share with the world. You are an unfinished book. And the best part of the story is, you'll never be done.

Our new Versa notebook is flexible enough to help you with all the pages of your life. It's a canvas with a keyboard. A power tool with a trackball. It's perfect for sharing ideas with people right in front of you or, using its advanced communications capabilities, a continent away. The artistry of its new, brighter, active-matrix color screen could well inspire you to some artistry of your own. While its unique, color TouchPen™ capability invites precise annotating, or impassioned finger-painting. (For up to 10 hours on a single charge.) Versa can be a notebook, a desktop, or a tablet. Above all, its modular design lets it expand for changing needs and new technologies. Because in technology as in life, there's a new page written every day.

NEC

*UltraLite Versa 25C: PC Magazine, 1.11.94. **340MB hard drive, storing up to 680 MB using Microsoft DoubleSpace. Versa, TouchPen, VersaTrack, DoubleTime and FastFacts are trademarks and UltraCare a service mark of NEC Technologies, Inc. Docking Station is a trademark of NEC Home Electronics, Inc. The Intel Inside logo is a registered trademark of Intel Corp. All other trademarks and registered trademarks are the property of their respective owners. Specifications subject to change without notice. © 1994 NEC Technologies, Inc. NEC CSA#GS00691A055341

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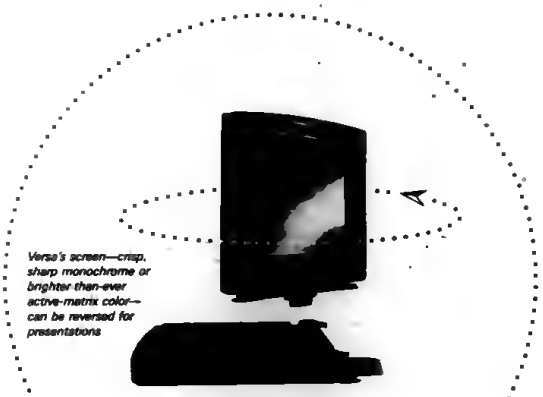
That's why we've made the NEC Versa arguably the most modular and expandable notebook PC you can buy.

It's also why, when you buy a Versa, you're buying into something else: a relationship. With us. We'll make it a relationship that works, too. By making component upgrades as easy as possible. And by being here to provide answers, support and a 3-year limited warranty enhanced by UltraCare,™ our full-service program of fast response and support anytime, anywhere, at home or overseas.

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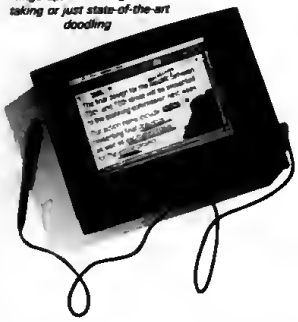


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NEC

Continued from page 41

application was designed to speed file access and extend PowerBook battery life by making better use of Apple Computer, Inc.'s supplied RAM disk.

Features include file synchronization, which automatically keeps copies of files on a hard disk and RAM disk, and RAM disk preservation, which enables users to shut down their computer without losing stored files.

The Atticus RAMDiskSaver costs $69.95.

▶ *Atticus Software*
(203) 348-6100

Business Forecast Systems has introduced Forecast Pro for Windows Version 2.0 and Forecast Pro for Windows XE (Extended Edition), two forecasting systems.

According to the Belmont, Mass., company, Forecast Pro for Windows Version 2.0 employs a rule-based expert system and forecast simulation to analyze data. The product recommends an appropriate forecasting technique then explains its reasoning.

Forecast Pro's forecasting techniques include exponential smoothing, dynamic regression, Box-Jenkins and methods designed for shorter data sets.

Forecast Pro for Windows XE is a superset of the standard edition created to solve the specific problems of multidepartment corporations.

Extended Edition features multiple-level exponential smoothing and X-11 seasonal decomposition factors.

The Standard Edition costs $595, and the Extended Edition costs $995.

▶ *Business Forecast Systems*
(617) 484-5050

Hardware

Aspen Computer, Inc. has introduced the Aspen 486 Color Suhnote computer.

According to the Buffalo, N.Y., company, the Aspen 486 Color Suhnote features an Intel Corp. SL enhanced processor; 4M bytes of RAM, expandable to 20M bytes; an 80M- or 120M-byte hard disk drive; and a PCMCIA Type II slot.

The four-pound product also offers a docking station that provides expansion capabilities, including two 16-bit expansion slots, two serial ports, one parallel port, one external keyboard port and one external VGA port.

Prices range from $1,995 to $3,295.

▶ *Aspen Computer*
(716) 626-0315

Pacific Rim Systems, Inc. has introduced the PCMCIA Multi Drive I/O Card.

According to the Hayward, Calif., company, the Type II card houses all of the necessary electronics to simultaneously control CD-ROM, fixed hard, floppy, removable cartridge hard, QIC-80 tape, QIC-3010 tape and QIC-3020 tape drives.

The product supports single- and double-speed CD-ROMs. Tape drives capable of 2M byte/sec. transfer speeds are able to stream between 14M to 22M byte/min., depending on the level of compression.

A PacificRim PCMCIA Multi Drive I/O Card costs $199.

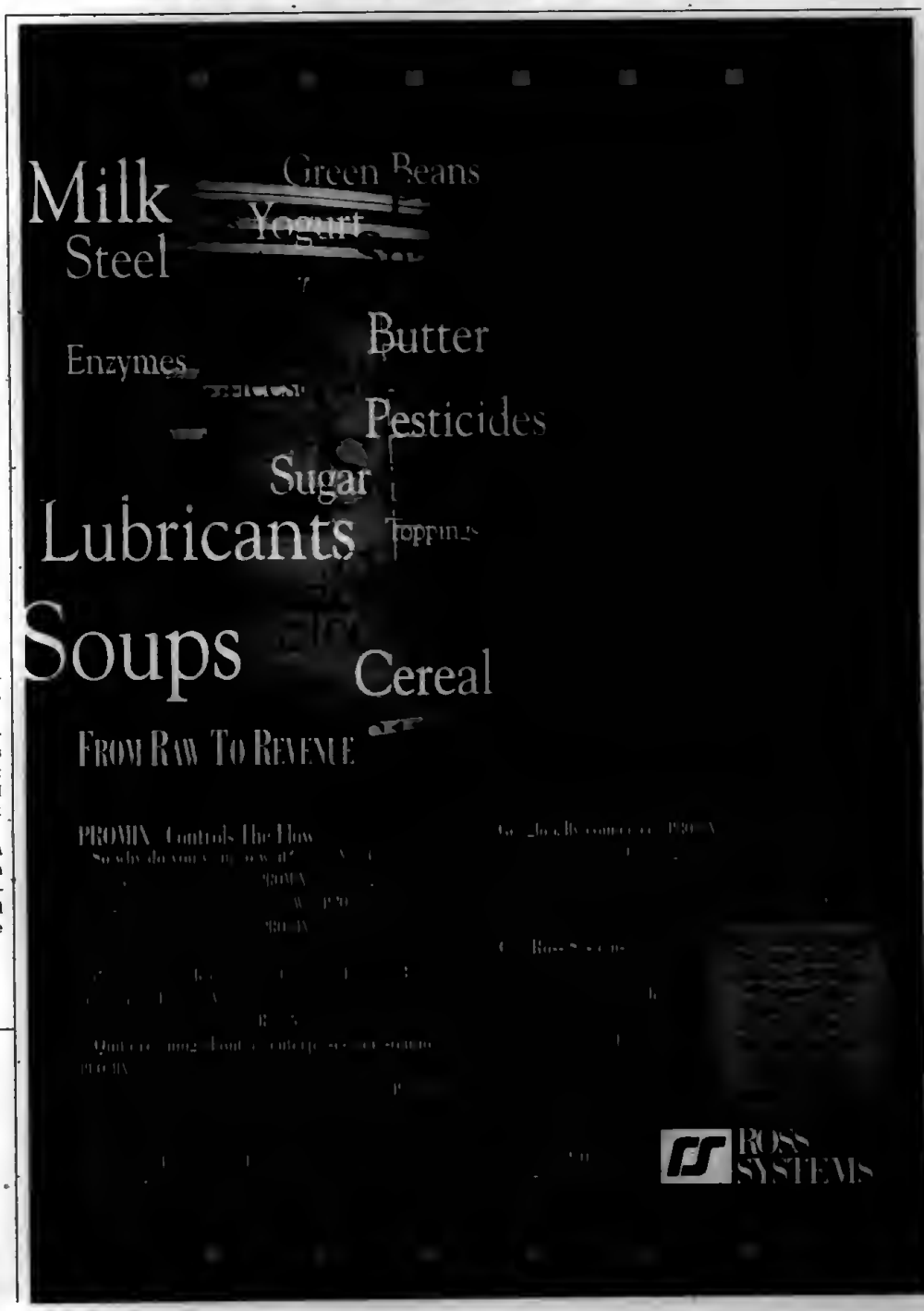
▶ *Pacific Rim Systems*
(510) 782-1013

Scan/US, Inc. has introduced Scan/US, a Windows-based geomarket analysis package that allows users to pick sites for new stores, target a direct-mail campaign, set up sales territories and find new prospects with desired demographics.

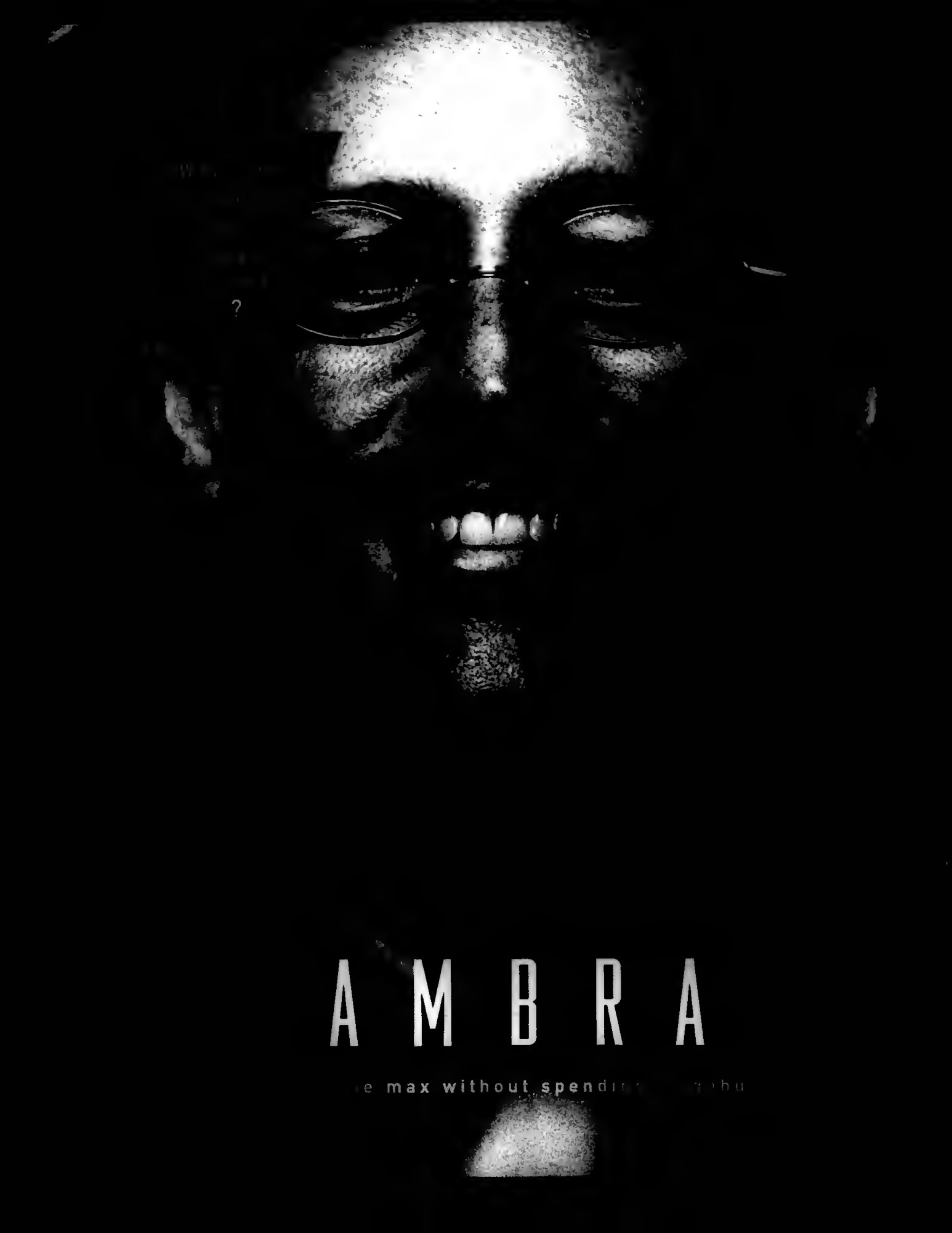
According to the Los Angeles company, the product changes numeric data into color-keyed maps that show where potential customers are located.

Scan/US costs $395 until March 15. After that, it will be available for the list price of $695.

▶ *Scan/US*
(310) 820-1581



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81 MILLION WINMARKS

[redacted]

1 • 8 0 0 • 2 3 9 • 5 7 2 3

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Fully configured systems starting at

$4,351

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- MS-DOS® 6.0, Windows 3.1, mouse

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- 2X CD-ROM drive
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$3,499



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- 256KB processor cache
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- 200-watt power supply
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4 Model TP60E/VL[3]

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- Dual 64-bit processor complex
- 8MB RAM, max: 128MB
- 512KB processor cache
- 3.5" 1.44MB diskette drive
- 540MB (10.5ms) Fast SCSI-2 hard disk
- Onboard dual-channel Fast SCSI-2
- 8 EISA slots (2 VESA)
- 12 storage bays
- L25 S3 805 graphics accelerator, 1MB DRAM
- 2X CD-ROM drive
- 15" Flat Square color monitor, LR, NI
- Tower casing
- 350-watt power supply
- MS-DOS® 6.0, Windows 3.1, mouse

$4,719

intel inside

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Low-cost workstations flood market

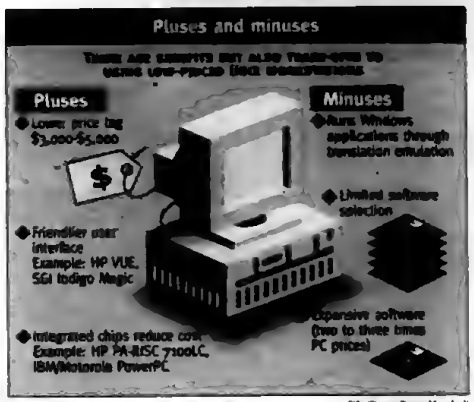
By Jean S. Bozman

■ A new wave of low-cost workstations is arriving on the market, rivaling Intel Corp.-based PCs in price.

The good news is that the low-priced, high-powered hardware could reduce information systems outlays and provide an alternative to standard PCs. But the low-cost workstations will not become popular without a rich supply of PC-priced Unix software, users said.

The vendor rush toward low-end workstations began in early January when Silicon Graphics, Inc. (SGI) filled out its line of low-end Indy workstations [CW, Jan 10]. It will accelerate with Hewlett-Packard Co.'s announcement this week of low-cost models, which are expected to start at $3,995 [CW, Dec. 20], followed by Sun Microsystems, Inc.'s expected revamp of its low-end SPARCclassic LX by March. Industry analysts also predict low-end Alpha AXP 300 workstations from Digital Equipment Corp. this year.

Unix workstation sales slowed to less than 10% in 1993, prompting vendors to look for growth where workstations are offered as PC alternatives, said Nancy Battey, director of workstation research at International Data Corp. in Mountain View, Calif.



CW Chart: Dave Marshall

Looking high and low

Now, users who want to "upsize" PC applications to high-end PCs may evaluate new low-end workstations, too. "Microsoft's [Windows] NT is bringing the traditional PC users who never thought of using workstations up into the realm of 32-bit operating systems," Battey said. But the market's expansion is a two-edged sword that forces direct comparisons, according to analysts.

Unix vendors must persuade independent software houses to port their applications to run on low-cost workstations at PC prices, said Terry Bennett, director of technical systems research at Computer Intelligence/InfoCorp in Beaverton, Ore. "Until then, this is guerrilla warfare and house-to-house street fighting to get critical applications to run on workstations."

One recent example of a PC software port is Adobe Systems, Inc.'s PhotoShop printing application, which has been ported to run on SGI and Sun workstations, Bennett said.

Users said they think the trend to low-end machines is fine — as long as the Unix vendors follow up with low-cost applications.

The supply of personal productivity software for Unix machines is limited, and Unix versions are often priced two to three times higher than PC software, users said.

However, a drop in hardware prices alone could tempt some mixed-vendor shops to purchase low-cost Unix workstations as PC alternatives. The county of Los Angeles court system has about 2,000 PCs, including more than 400 HP

Workstations, *page 57*

Blooming sales

By 1997, about 1 million workstation units will be sold worldwide each year, according to International Data Corp. But sales of personal workstations, including Intel Pentium machines, are expected to mushroom to 9 million units by 1997, IDC said.

Client/server computing

United Airlines adds client/server to menu

By Ellis Booker

Say what you will about airline cuisine, there is no argument that there is lots of it flying overhead.

United Airlines' Catering Division, for instance, handles 75 million in-flight meals a year.

But until last June, the management of this giant inventory — including an annual allotment of 150 million swizzle sticks — was handled on stand-alone PCs running word processing software.

Time-consuming updates

"When we needed to make a change in a regulation or a menu, we had to find it and manually update it on thousands of pages," said Barbara Ibach, staff food and beverage planner at the Catering Division, which is based at United's Chicago headquarters.

While Microsoft Corp.'s Word was better than the typing pool that Ibach's predecessor used eight or nine years ago, "Word was never designed to do what we were using it for," she said.

Changes had to be updated manually across United's own 17 kitchens and 250 food contractor locations worldwide. In addition, the 10- to 15-pound "Service Level" guides, which specify everything from the ingredients in a brownie to how many servings should be placed on each airplane, had to be printed and mailed out to these locations four or five times a year.



Frank D. Wells

Dishing it out

MEALS UNITED SERVES ANNUALLY:
58 million domestic
17 million international

GODIVA CHOCOLATES:
30,000 pounds

CHICKEN BREASTS:
800,000 pounds

SOFT DRINKS:
29 million cans

Eighteen months ago, Ibach and United's information systems group began exploring alternatives.

Specifically, they hungered for a solution that would conform with United's emerging information technology architectural standards.

Building anew

That strategy, called the Integrated Tactical Plan for Distributed Systems, seeks to "help direct different departments as they move to client/server computing," said Steve Lark, manager of development support and information services planning at United.

Last June, United tapped Client Server Technology, Inc., a systems integration and consulting firm in Schaumburg, Ill., for the project.

The menu and procedures tracking database was built with Borland International, Inc.'s Paradox for Windows relational database.

Two 486-class Novell, Inc. servers — one containing the database, the other acting as a communications server for remote users — are connected to five 486-based PCs at United's corporate headquarters in Chicago.

Another 13 or so remote kitchen sites dial in to the database over dial-up lines. The division is also telecommunicating with one of its largest catering suppliers, Dobbs International, Inc. in Memphis. Dobbs, in turn, passes along updated menus and schedules to its kitchens around the country. (United Airlines is, incidentally, in the process of selling its kitchens to Dobbs.)

Savings all around

Savings in printing and distribution costs are anticipated, but the biggest plus of the new system will be both time savings and accuracy, according to United.

At this point, the configuration has not eliminated paper mailings. Because not all of the kitchens have been equipped, the communications server can receive only one call at a time, and United's international locations have yet to be added to the pie.

Ibach noted that the application's data model was designed very carefully with an eye toward the future. That is, it had to connect easily to client/server-based versions of other United applications that today run on a variety of mainframes.

"The idea was that this system would be the basis of future automation," she said. "It was designed so that new pieces can be added on as modules."

Not unlike making a main dish of chicken and wild rice and then adding a side dish of green beans.

Jean S. Bozman

Unix's future on the table



Any time executives and engineers at Sun, HP and IBM sit down together, the Unix community holds its breath. After all, these companies ship more than half of all Unix systems sold and can determine what next year's de facto Unix standards will be.

Now the stakes are even higher. This time, what's on the table is nothing less than the long-range viability of a unified Unix system. If these three vendors are unable to cobble together a unified approach, users may very well decide that their strategic future lies elsewhere.

HP, IBM and Sun already share research and development efforts in object technology. They are also working with Novell and The Santa Cruz Operation through the 10-month-old Common Open Software Environment (COSE) to forge a common set of desktop interfaces. Their move for Unix unity surged with a September announcement that more than 70 Unix vendors agreed to comply with X/Open's common set of 1,170 APIs. Without the assent of Sun, HP and IBM, the X/Open agreement that unified the core Unix system APIs would not have been forged, X/Open insiders said.

Not so fast

However, there's more work to be done. For some time, the two major Unix vendor groups — the Open Software Foundation (OSF) and Unix International — have seemed out of step with the push for Unix unification since they championed two variants of Unix: OSF/1 and Unix System V. In December, Unix International shut down, removing one barrier to unity. Now the OSF includes IBM and HP, but not Sun. And, unless and until the OSF is reformulated, COSE remains the only common ground for Sun, IBM and HP.

Even as a new OSF structure is being hammered out [CW, Dec. 20], many large corporate users are feeling left out of the deliberations. These large IS shops, which include several Fortune 50 companies, fear that the big Unix vendors will forge their plans without adequate user feedback. The OSF's end-user steering committee wants to review plans to restructure the organization. Pending an announcement, users can only speculate whether COSE will find a home at the OSF.

These maneuverings may seem like pointless politics, but in fact, the Unix unity that many users seek hinges on the outcome of these off-stage talks. Most Unix shops already have a mix of Unix workstations, servers and software and need some solid standards around which they can develop portable, distributed applications and on which they can base a full-fledged downsizing strategy. If Unix vendors don't get their act together, downsized mainframe applications may land not on Unix servers but on Microsoft's Windows NT servers.

Microsoft, beware

If Sun, HP and IBM *can* agree on a game plan, Microsoft should worry. With a reasonable team effort, the Unix players can stay ahead of Windows NT's growing market — at least on the enterprise server side. They already have a 10-year head start with server and network technology that generates about $12 billion in global Unix sales each year.

But if Sun plays along with IBM and HP in fits and starts and then creates separate standards for its Solaris operating system, users will no longer believe in portability among major Unix platforms. And if IBM and HP cooperate without Sun's full buy-in — as they did on Taligent object technology [CW, Jan. 10] — the prospect of Unix unity will fade. Sun is pursuing its Project DOE strategy with Next Computer's NextStep object technology.

So far, Microsoft is feeling pretty good about its prospects. "There are a lot of different versions of Unix out there, and getting them together is going to be a tough task," a Microsoft spokesman reflected after September's Unix unity announcement. "Whether this is a more serious effort than one of the previous [Unix unity] efforts, we have no way of knowing."

By pulling together, IBM, HP and Sun can "grow" the Unix server market and spur the development of shrink-wrapped Unix application programs. Each can profit from growing market share and still sell their own versions of Unix. But if things go awry and each of them pushes a proprietary game plan rather than a common Unix technology, all bets are off.

Bozman is *Computerworld*'s senior West Coast editor.

Operating systems

Microsoft, Novell set for battle

By Ed Scannell

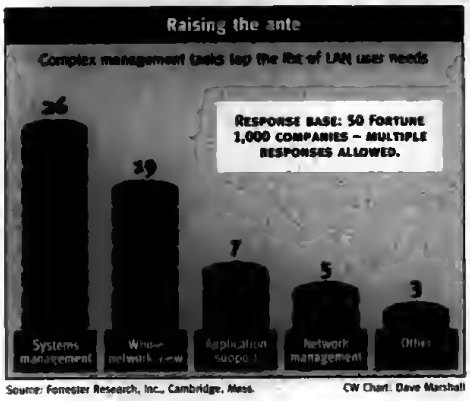
■ Microsoft Corp. is poised to invade the heart of the LAN operating system market with Windows NT Advanced Server, but one market researcher said it believes it will be extremely difficult to pry loose Novell, Inc.'s iron grip on that sector.

In a survey among Fortune 1,000 information systems managers conducted by Forrester Research, Inc., almost two-thirds (64%) of the IS executives surveyed said Advanced Server gives them little reason to throw out their existing NetWare servers in favor of Windows NT Advanced Server.

At the center of this belief is the fact that most executives see Advanced Server as a server operating system for applications and not as the foundation for a companywide network.

What also makes Microsoft's challenge suspect is its current track record in the networking arena. The relatively lackluster success Microsoft has had with LAN Manager is one example, according to the Forrester report.

"MIS knows they'll never make it to companywide client/server without a LAN operating system that sees the network as a single entity. And for the most part, the answer is NetWare," said Paul Callahan, networking analyst at Forrester Research.



Source: Forrester Research, Inc., Cambridge, Mass. CW Chart: Dave Marshall

Drawn out but inevitable

Most corporate accounts interviewed looked at upgrading to NetWare 4.0 as "inevitable," although they said the process could take 12 to 18 months.

"Microsoft may have a convincing story to tell with Advanced Server, given their desktop stranglehold with Windows, but if Novell delivers what they say they will [NetWare 4.1], it is worth it for me to stay put," said Dan Spivey, PC coordinator at a Gaithersburg, Md., company.

Callahan called the NetWare series "a slow-moving but unstoppable steamroller" and said many big Novell shops are taking the time to unsnarl companywide naming and chasing down money for the NetWare 4.1 upgrade.

A key battle not yet fought in this war is over systems management and ownership of directory services.

Microsoft should lead with its Hermes systems management, then persuade IS to wait for the advanced object-oriented file system of Cairo, the follow-up to Windows NT.

Counterattack

To counter this move, Novell will produce a steady stream of practical tools and hopefully follow with a more flexible systems management strategy.

The upcoming Version 4.1 of NetWare, however, should shore up Novell's directory services. If it does, Microsoft's job of displacing NetWare in corporate accounts will become extremely difficult.

The competition between the two companies to produce the best systems management capabilities is wide open.

"When Hermes ships, it will be a disappointment because it will be limited to desktop configuration management and software distribution," Callahan said. "Even so, Novell still has too many holes in NDMS to walk away with that prize."

Many large accounts may well end up deploying both, Callahan said, and funneling their data to bigger host platforms from a range of vendors such as IBM, Sun Microsystems, Inc. and Hewlett-Packard Co.

Briefs

Wang software through the mail

Wang Laboratories, Inc. signed an agreement with The Software Developers Co. for The Programmer's Shop business unit to sell Wang software packages through its mail-order catalogs. The Programmer's Shop initially will carry Wang's Open/image Custom Controls for Microsoft Visual Basic, a tool for adding imaging capabilities to applications built using Microsoft Corp.'s Visual Basic language. Open/query builder, a database query package that complies with the Open Database Connectivity specification, will also be offered when it ships next month, according to Wang.

WaveLAN to support protocol

WaveLAN, the wireless LAN product from NCR Corp., will comply with the planned IEEE 802.11 Media Access Control protocol, NCR said last week. The LAN Media Access Control protocol, approved by the Institute of Electrical and Electronics Engineers, Inc. last month, was designed to keep mobile users connected to a wireless LAN as they move through a building. The protocol also anticipates support for small, battery-powered computers and voice applications.

Digital

Update

TeamLinks MAIL MOVES YOUR INFORMATION



TeamLinks Mail is the workgroup software from Digital that makes organizing, accessing, and sharing information fast and easy across your PC network. And with terrific results. You save time and boost productivity across your business. Today, businesses everywhere are migrating to more productive distributed computing environments. At the same time, your users want more applications to choose from on their desktop PCs. That's exactly why Digital introduced TeamLinks Mail for Windows V2.0. It's all you need to extend your ALL-IN-1 software to accommodate client/server technology.

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Boost Productivity In addition to TeamLinks Mail and file cabinet capabilities, you can add more ALL-IN-1 client/server applications, such as conferencing and scheduling. Both are now available for your desktop.

Forge a Bright Future Digital is committed to establishing TeamLinks software as the preferred integrated application in the LinkWorks desktop environment. The LinkWorks product — Digital's object-oriented, client/server-based software framework — gives you the capability to easily and continually simplify work processes, access multiple data resources, and incorporate information from them.

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A chameleon-like drive enables the Shelby to take on the personality of whatever drive it duplicates — practically guaranteeing risk-free archiving of all your information. What's more, the Shelby saves you time and money. There's no need to invest in additional software before beginning your system migration. The Shelby can be integrated with any platform using a MASSBUS controller, with no effect on your operating system or application software.

A Closer Look

The Shelby RM06 is a cost-effective solution for applications that are read intensive and store large amounts of information over long periods of time. Its portable, removable media exhibits 25-year retentivity. And because the Shelby RM06 is similar in size to and is stored like a CD, it can replace two typical RP/RM media packs. The result is a savings in storage space, plus easier transportability.

The Shelby RP12 is the choice for applications that are write intensive and do not require intensive archiving. No bigger than a paperback novel, this media is portable, exhibits 10-year retentivity, and also offers unbeatable space savings. When a secure environment is a priority, migration from the RP07 to the RP12 (with nonremovable media) is the smartest choice.

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DNSCA-B*	DEC WANcontroller 614 (4 WAN ports for routing only, 1.2 Kb/s to 128 Kb/s)	$ 4,000
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DNSEC-B*	DECNIS 600-RP (For low-speed routing)	$18,000

*Refer to Digital's Software Product Description (SPD) #38.05.08 for technical details.

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A PICTURE-PERFECT PARTNERSHIP

Photo Museum Gets More for Less with Software AG and Digital

At the George Eastman House (GEH), a nonprofit museum of photography in Rochester, New York, users have taken innovative data management into their own hands. With innovative technology, the GEH has simplified its information system by automating its card catalog and placing many historical photographs online.

Better yet, the museum managed to cut its information system costs in half. Digital's OpenVMS VAX system and Software AG's ADABAS RDBMS and Natural fourth-generation application development environment provide the basis for the museum's newly automated system.

Before the new system, GEH workers found themselves in a predicament. They were buying time from a mainframe at the University of Rochester (which owns the museum). Most processing was done at night in batch mode. It was nearly impossible to get any interactive time during the day. But with 400,000 historic photos to catalog — dating back to the early days of photography — it was time for a change.

A Solution That Maximizes Performance

Andrew Eskind, Information Systems Manager at GEH, started with Software AG's Natural applications. "The Software AG products have been key for us. They offer powerful capabilities for data management and are very easy to learn and use." Software AG provided a portable environment that moved applications from the mainframe to the VAX system GEH acquired. "Even with our average 10 to 12 users online, our MicroVAX 3100 system outperforms the mainframe. Our operational costs were slashed by more than 50 percent — and we haven't added any staff."

Today, users enjoy easy database management capabilities with powerful online searching. Specific information on individual photos and their locations can be quickly selected through a series of pull-down menus and sent to a printer.

In the future, Software AG and Digital stand ready to keep GEH supported with technology to meet their needs. Digital's Alpha AXP platform provides a path of unbounded growth. Jeff Condon, director of strategic partners at Software AG, explains it this way. "Offering Software AG products on Digital's Alpha AXP platform means that our customers are assured of support for their most demanding application needs well into the 21st century."

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2/23/94	Washington, DC	2/24/94
3/2/94	Orlando, FL	3/3/94
3/9/94	Seattle, WA	3/10/94
3/16/94	Milwaukee, WI	3/17/94
3/23/94	Hartford, CT	3/24/94
3/30/94	Philadelphia, PA	3/31/94
4/6/94	San Antonio, TX	4/7/94
4/13/94	Long Beach, CA	4/14/94
4/20/94	St. Louis, MO	4/21/94
4/27/94	Rochester, NY	4/28/94

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SECTIONS A-F MUST BE COMPLETEO TO PROCESS YOUR REGISTRATION. *Please type or print clearly.* CTT

A. NAME _____ **TITLE** _____

COMPANY _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

PHONE _____ **FAX** _____ **E-MAIL/INTERNET** _____

B. Your Business or Profession (Circle one only)
1 Manufacturing (other than Computer/Communications)
2 Finance/Banking
3 Insurance
4 Real Estate
5 Healthcare Services
6 Legal
7 Hospitality
8 Retail/Wholesale Trade
9 Transportation
10 Utilities
11 Education/Research
12 Process Industries (Chemical/Petroleum/Food Processing)
13 Government (State/Local)
14 Government (Federal)
15 Military
16 Aerospace
17 Consultants (Independent)
18 Carriers/Value Added Networks
19 Interconnects
20 Manufacturing (Computer/Communications)
21 Application Software Developers
22 VAR/AD/Systems House
23 Distributor (Computer/Communications Related)
24 Other (specify)_____

C. What Is Your Job Function (Circle one only)
1 V.P. MIS
2 MIS/IS Manager or Director
3 Technical Network Manager
4 LAN Manager/Administrator
5 Network Staff
6 Other Manager
7 End User
8 Other (specify)_____

D. Estimated gross annual revenue of your entire company/institution (Circle one only)
1 Over $10 billion
2 $1 to $9.9 billion
3 $500 to $999.9 million
4 $100 to $499.9 million
5 $50 to $99.9 million
6 $10 to $49.9 million
7 $5 to $9.9 million
8 $4.9 million or less

E. Does your company have or use multinational (international) networks?
☐Yes ☐No

F. What is your role in the purchasing process of communications equipment and services? (Circle one only)
1 Final decision maker
2 Recommend
3 Specify
4 No role

SECTIONS A-F MUST BE COMPLETEO TO PROCESS YOUR REGISTRATION. *Please type or print clearly.* CTT

A. NAME _____ **TITLE** _____

COMPANY _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

PHONE _____ **FAX** _____ **E-MAIL/INTERNET** _____

B. Your Business or Profession (Circle one only)
1 Manufacturing (other than Computer/Communications)
2 Finance/Banking
3 Insurance
4 Real Estate
5 Healthcare Services
6 Legal
7 Hospitality
8 Retail/Wholesale Trade
9 Transportation
10 Utilities
11 Education/Research
12 Process Industries (Chemical/Petroleum/Food Processing)
13 Government (State/Local)
14 Government (Federal)
15 Military
16 Aerospace
17 Consultants (Independent)
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2 Recommend
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A. NAME _____ **TITLE** _____

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1 Final decision maker
2 Recommend
3 Specify
4 No role

RAID subsystems

Clariion adds cache to RAID lineup

By Stephen P. Klett Jr.

The Clariion business unit of Data General Corp. in Westboro, Mass., is slated to unveil today three additions to its Clariion line of redundant arrays of inexpensive disks (RAID) subsystems that incorporate mirrored cache technology to improve write performance and data reliability.

According to DG, the subsystems can perform two to three times more writes (up to 3,200 I/O requests per second) than subsystems that do not have cache — in half the time.

DG's "implementation is among the more capable systems around," said Robert Katzive, vice president at market research firm Disk/Trend, Inc. in Mountain View, Calif. "It's fast, powerful, highly redundant and well thought-out from a reliability standpoint, and it's competitive from a cost standpoint."

The new models include the high-end Clariion 2300 for large Unix and Novell, Inc. NetWare environments and the entry-level Series 1000 for small NetWare sites.

The 2300 is available with 8M, 16M, 32M and 64M bytes of mirrored cache for up to 20 disk drives storing up to 40G bytes of data. The Series 1000 family is available with either 8M or 16M bytes of cache and up to 20G bytes of storage with prices starting at $19,100. DG's high-end 2200, which was announced last September, can be upgraded with mirrored cache as well. Noncache versions of both series are available now, with cache models slated for shipment next month.

All models share the following features: support for RAID Levels 0, 1, 3, 5 and a combination of 0 and 1; dual storage processor boards; on-line repair of drives, processors, power supplies and fans; and global sparing, which provides automatic, unattended disk rebuild in the event of a drive failure.

The Clariion line supports the following platforms: IBM RS/6000, Sun Microsystems, Inc. SPARCstations and Extended Industry Standard architecture-based systems running Novell's NetWare.

Workstations

CONTINUED FROM PAGE 51.

Vectra PCs, but uses HP workstations as HP OpenView network monitors.

Still, the site would like to use more workstations as clients to HP's Unix file servers. "If the [price] delta between PCs and workstations comes under $1,000, then the workstations become very attractive," said John Doktor, an IS manager in the county court system.

Doktor said workstations handle multiple job sessions better than PCs as well as provide faster throughput. However, he said, workstations have limited connectivity with PC peripherals.

The limits

Even if users opt for SunSoft, Inc.'s Wabi interface to run Windows applications on Unix workstations, only a limited number of Microsoft Corp. applications have been certified for use with Wabi, users noted. Two other Windows-compatibility packages for Unix workstations are sold by Insignia Solutions, Inc. in Mountain View, Calif., and Quorum Software Systems, Inc. in Menlo Park, Calif.

Unexplored market

New classes of software that would entice commercial users to use low-cost workstations have yet to be written, some users said. Possibilities include multimedia user interfaces and intelligent software agents that gather electronic mail.

"We now have computers that can do the same old stuff a whole lot faster, but the computer industry has not taken a look at how they can change our whole world," said David Pensak, principal consultant for advanced computing technology at Du Pont Co. in Wilmington, Del.

Multimedia applications could spur low-end workstation growth, but Unix vendors cannot gain profits from commodity hardware prices. "It's like the Wild West, it's so wide open," said Marcia Brooks, editor of the "Anderson Report" in Milwaukee. "It's OK to talk about it, but it's not clear anybody's making money off of it."

For example, she said, some of the Sun and SGI low-end workstations target high-end Macintoshes for publishing applications. But low-end models cost more as users add peripherals, memory and disk drives, she said.

[redacted]

Clarity Software, Inc. has introduced Rapport Script, an object-based word processing package for Unix users.

According to the Mountain View, Calif., company, the product allows users to create complex reports, presentations, newsletters and documentation.

Features include a "basic" mode, with common functions available by pointing and clicking on the control panel; an "advanced" mode enabling power users to access sophisticated layout and formatting options; in-place creation and editing of nontext elements such as spreadsheets, drawings and charts without calling up a new window; and support for slide presentations as an alternate form of communication.

A single floating license of Rapport Script costs $695.

▶ *Clarity Software*
(415) 691-0320

FourGen Software, Inc. has introduced the Enterprise Fixed Assets application, a mainframe replacement asset management and tracking system created for Fortune 1,000 corporations.

According to the Seattle company, Enterprise Fixed Assets offers the ability to fully track and report on both simple and complex assets.

Features include a Location FlexKey for tracking the physical location of an asset or subasset. The application also includes depreciation, transfer, full asset purchase, disposal and reporting capabilities.

Pricing begins at $20,000.

▶ *FourGen Software*
(206) 522-0055

Show Business Software has announced Show Business, a reporting, display and editing tool. Show Business was designed to access information in Notes databases, summarize it and present it in the form of diagrams, text, charts, tables and dashboards.

According to the La Palma, Calif., company, Show Business is a client application that offers an additional way to browse, combine, modify and query Notes databases and other information.

Show Business costs $495.

▶ *Show Business Software*
(714) 228-2294

Lead Technologies has introduced LeadView 3.0 for Windows, an image management application.

According to the Charlotte, N.C., company, LeadView 3.0 offers conversion among more than 100 file formats, image enhancement, scanning, screen grab/slide show, "lossless" compression at average ratios of 7 to 1, Lead CMP or JPEG compression at ratios exceeding 200 to 1, a paint program with 18 features and a photo album that builds a thumbnail directory of images.

LeadView 3.0 for Windows costs $99.

▶ *Lead Technologies*
(704) 549-5532

PC InterConnect has introduced One-Man-LAN, a product created for users who work with more than one PC and want LAN capabilities without the expense and complexity.

According to the Provo, Utah, company, the product is compatible with sector-level disk utility programs.

One-Man-LAN supports data transfer rates of up to 680K byte/sec. (more than 40M byte/min.) and allows interconnected PCs to be located more than 100 feet apart.

One-Man-LAN costs $199 for a two-PC configuration that includes software, hardware, documentation and toll-free customer support.

▶ *PC InterConnect*
(801) 374-8880

Eden Systems Corp. has introduced The Meeting Room, software designed to let users hold meetings that are faster, cheaper and more convenient. Meetings are held electronically on a company's existing PCs and networks.

According to the Indianapolis company, The Meeting Room allows users to set an agenda, invite guests, discuss issues, make decisions, assign tasks, distribute meeting minutes and communicate results. The software is an alternative to face-to-face meetings.

The Meeting Room runs on IBM or compatible PCs under DOS or Windows. A 386 or higher machine running at least DOS 3.1, Windows 3.1 or OS/2 2.1 is recommended.

The product supports any Novell, Inc.- or NetBIOS-compatible network and is compatible with local- or wide-area networks and peer-to-peer LANs with or without a dedicated server.

Pricing begins at $895 for a 10-user package.

▶ *Eden Systems*
(317) 848-9600

Product shorts

OpenVision has introduced Open VAssets, an asset management tool that automates the discovery of asset data on PCs and Unix workstations. The product provides complete details on an organization's current information systems assets. Open VAssets collects software, hardware, vendor, configuration, financial and purchasing information. Cost: $10,000 per management station. OpenVision, Pleasanton, Calif. (510) 426-6400. ... **MayFlower Consulting** and **Arkwright Insurance** have introduced Disaster Recovery Services. The software product was designed to provide a disaster preparedness audit, assist in the identification of the exposures an organization faces and share information about the recovery experiences of customers in similar industries. Expert loss control engineering is also included, along with on-line and remote access. Cost: starts at $15,000 MayFlower Consulting, Burlington, Mass. (617) 270-9000. ... **Aurora Technologies** has introduced workgroup-oriented features to its Socrates optical character recognition (OCR) software for SPARC systems. The upgrade has added command-line operation that provides networkwide access to OCR functionality from any terminal, PC or workstation on a SPARC-based network. Batch processing capabilities are also included. Cost: $999. Aurora Technologies, Waltham, Mass. (617) 290-4800. ... **EMS Professional Shareware** has announced the NW Utility Library on CD-ROM, a collection of public domain and shareware programs geared for Novell, Inc. NetWare consultants and LAN administrators. There are 974 products housed in the library. Types of programs include auditing, backup, documentation and file transfer. Cost: $99.50 on disk or $59.50 on CD-ROM. EMS Professional Shareware, Olney, Md. (301) 924-3594.

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College puts up E-mail Dukes

Duke University president champions move to campuswide E-mail

By Gary H. Anthes
DURHAM, N.C.

■ When Nannerl O. Keohane moved into the president's offices at Duke University recently, she was in for an unpleasant surprise: no electronic mail.

Keohane, a 53-year-old information systems enthusiast and former president of Wellesley College, said the only way to send E-mail to a colleague down the hall was to send a message over the vast Internet — assuming the colleague was on the Internet. "I felt like I had my hands cut off," she said. "I can't function without E-mail."

An E-mail project was under way on campus at the time but will now get added impetus thanks to Keohane's interest. Project Hermes, named for the Greek messenger god, is intended to bridge E-mail islands at Duke while bringing 22,000 students, faculty and staffers into the age of computer-based communications.

Some access available

According to Jesse Eversole, director of academic computing, some 7,000 people at Duke — mostly in the technical disciplines — have E-mail access via the Internet. He said an unknown number have localized E-mail capabilities within the business, law, medical and other schools. "But we want full connectivity," he said. "When you find these local pockets, there's a good chance they just went off and got their own E-mail package."

There are at least eight different approaches to E-mail in use at Duke, including CC:Mail, Da Vinci, Pegasus, Microsoft Mail, Mail-11, X.400 and the Internet's Simple Mail Transport Protocol (SMTP), he said.

To bridge these incompatible systems and enable connectivity to users at other institutions, Duke considered but decided against buying software gateways such as a Lotus Development Corp. product that lets its CC:Mail on a LAN connect via SMTP to the Internet. "We would have had to buy eight gateways and install them in many, many different places," Eversole said. "We didn't have the manpower to do it."

Instead, for $40,000, Duke bought E-mail conversion products from Innosoft International, Inc. in Claremont, Calif. Installed on a Digital Equipment Corp. VAX, they will translate among the major E-mail protocols that Duke is using. The VAX, installed at the Duke Medical Center, is a node on DukeNet, a campuswide fiber-optic network.



Duke University President Nannerl O. Keohane: *'I felt like I had my hands cut off. I can't function without E-mail.'*

Duke is also installing on the network a Sun Microsystems, Inc. SPARC-10 to act as an E-mail server for the university. It will support three additional components of Hermes:

- **Electronic Directory Services.** Based on the CSO Name Server, a directory service package from the University of Illinois, it will provide simple mnemonic mail addresses for all university E-mail users.
- **Mailbox Services.** To enable financially challenged students to have E-mail access, the university is establishing a centrally managed public mailbox facility in which anyone can have a mailbox, even those without their own PC.
- **Usenet News Service.** The Unix-based distributed information service will be moved off an underpowered machine to improve performance and make the service available to more people.

The estimated onetime cost for hardware, software and labor to set up these capabilities is $344,000.

Not a crowd favorite

Although that amount is a tiny fraction of Duke's $28 million information systems budget, and although Project Hermes is sure to benefit thousands of users, the project was not well-received by some on campus, Eversole said.

He said many of the entrenched E-mail factions had set up their systems by downloading public domain software from the Internet and by using standard Unix utilities, and they did not understand why all campus groups could not do the same.

"They think they're getting E-mail for free," Eversole said. "They think we can just take that model and extrapolate it enterprisewide."

Eversole said when video comes to E-mail, systems complexity will increase "by an order of magnitude," making it less feasible for individual users to do their own thing.

Services

Fax-on-demand grows

By Lynda Radosevich

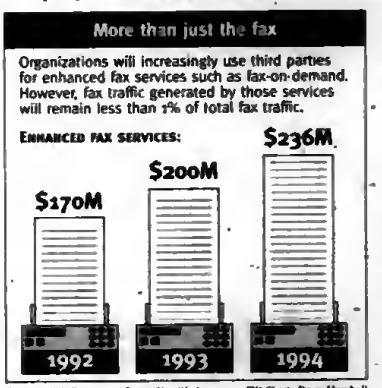
A recently launched service from PR Newswire, an electronic media distribution service based in New York, lets interested parties dial an 800 number to receive fax information on the service's corporate customers.

Called Pronto, the service is just the latest entry in what analysts say is a growing corporate fax segment: fax-on-demand services.

Fax-on-demand services deliver prestored documents by fax when a caller responds to voice prompts. It is an emerging market because it can help companies distribute information while controlling personnel costs, said Janet Fugazzotto, senior market analyst at BIS Strategic Decisions in Norwell, Mass.

Typical applications include sending product and financial information and providing technical support. Also, newspapers use fax-on-demand services to let readers obtain copies of articles from past issues, Fugazzotto said.

Companies can operate the service in-house or contract with a third party. The advantage of using a third-party supplier is that it maintains the equipment and the database that houses the information. Some suppliers also provide the distribution lists.



For instance, PR Newswire can blend the letterhead of a corporation with images and stored information that users can update over phone lines, according to a company spokesman.

Customers such as Apple Computer, Inc., Sun Microsystems, Inc. and The Boeing Co. use the service to let employees and external parties access price lists, product specifications and brochures, according to the spokesman.

PR Newswire uses recently released high-volume voice/fax port cards from Brooktrout Technology, Inc. in Needham, Mass. PR Newswire houses the cards in racked PCs linked to T1 lines. The $5,495 Brooktrout card, available since late December, can simultaneously send and receive fax and voice messages over eight channels, each powered by a dedicated processor. This enables high-volume voice/fax applications that have a quick response time, according to a Brooktrout spokeswoman.

Fax facts

Fax is bigger than E-mail. There were 24.5 million fax machines in use worldwide in 1993. That compares with 14.25 million E-mail boxes worldwide. Each fax machine is shared by an average of eight people, according to Electronic Mail and Micro Systems.

The average cost to send a two-page letter by a stand-alone fax machine is 9.74 cents. Costs include materials, such as paper and thermal paper, processing and labor costs. Fax transmission costs are included but not fax hardware and maintenance.

Doing it alone

While third-party services such as PR Newswire are growing, larger corporations such as Exxon Corp. and *The Washington Post* find it cost-effective to implement fax-on-demand services in-house, according to Sarah Stambler, editor of "Marketing with Technology News," a newsletter based in New York.

The main difference between in-house and third-party fax-on-demand services is the cost of equipment. Fax machines "are virtually ubiquitous" in companies, so they may not want to spend extra for third-party services, said Mark Winther, a vice president at Link

Fax-on-demand, *page 60*

Digital to bundle DCE, OpenVMS

By Craig Stedman

Digital Equipment Corp. plans to start bundling free runtime licenses for its Distributed Computing Environment (DCE) implementation with OpenVMS, but the company said users of its DEC OSF/1 operating system will still have to pay $235 for each DCE license.

Kevin Lynch, OSF/1 DCE product manager at Digital, said he expects the runtime charge for DEC OSF/1 to be eliminated "over time." He added, though, that Digital is not shipping enough DEC OSF/1 systems now to justify eating the $600,000 annual royalty fee it pays to the Open Software Foundation (OSF), DCE's developer, for use of the technology with that operating system.

The much higher level of OpenVMS shipments made absorbing the royalty payment more palatable on that side, Lynch said. "It was a volume business case for VMS, and we're still trying to get there on OSF/1," he noted.

Delivering DCE

Digital plans to start filling out its Distributed Computing Environment (DCE) implementation for OpenVMS in the next five months

Available now:
- DCE application development kit Version 1.0 for VAX only
- DCE runtime service for OpenVMS VAX Version 1.0 with unauthenticated remote procedure call (RPC) technology

(BASED ON OSF DCE VERSION 1.0.1)

Available in February:
- DCE application development kit Version 1.1 for both VAX and Alpha AXP
- DCE runtime service for OpenVMS VAX and AXP Version 1.1 with authenticated RPC and client support for DCE naming service and security

(BASED ON OSF DCE VERSION 1.0.2)

Available in May:
- DCE application development kit Version 1.2 for both VAX and Alpha AXP
- DCE runtime service for OpenVMS VAX and AXP Version 1.2
- DCE Cell Directory Server for OpenVMS VAX and AXP Version 1.2 (naming service)
- DCE Security Server for OpenVMS VAX and AXP Version 1.2

(PROBABLY BASED ON OSF DCE VERSION 1.0.2)

Source: Digital Equipment Corp.

Standing in the way

Marc Sorenson, OpenVMS DCE product manager, said the OpenVMS group at Digital thought the runtime charges "could become a barrier to the adoption" of the DCE technology. "The real expense of DCE would be having to buy a runtime license for every node," Sorenson said.

Lynch agreed that customers with mixed OpenVMS and DEC OSF/1 installations are likely to be upset by the split pricing strategy. But he noted that other Unix system vendors also continue to charge for the DCE licenses. "The body of the Unix market hasn't stepped up to [the runtime issue] yet," he said.

Some users did not find that logic convincing, however. John Claxton, system administrator at Insteel Industries, Inc., a drawn wire manufacturer in Mount Airy, N.C., that is looking at using DCE with its OpenVMS systems, said he was pleasantly surprised by the bundling decision the OpenVMS group made.

But Claxton added that he would not take the charge on the DEC OSF/1 side lying down if he were using that operating system. "If I was at an OSF shop, I would definitely hunt someone from DEC down and beat on them about it," he said.

Windows watchers

Digital also is working on DCE implementations that would support Microsoft Corp.'s Windows NT as both a client and server and Windows at the client level only. Those products are expected to ship in the second half of 1994, according to Kevin Lynch, who is product manager for both the DEC OSF/1 version of DCE and the Windows and Windows NT releases. Digital will likely put out DCE software developer's kits for Windows and Windows NT around midyear as an initial step, he indicated.

A DEC OSF/1 user at a medical facility who asked not to be identified agreed that he "would really like to see" Digital extend the free runtime bundling beyond OpenVMS. The charge for configuring DEC OSF/1 systems with runtime licenses "adds up," he noted.

Somewhat sympathetic

Steven Tihor, assistant research scientist at New York University in New York, was somewhat more willing to accept Digital's position that DEC OSF/1 volumes are not high enough to support DCE bundling at this point. "I can sort of understand it, but it does feel odd," Tihor said.

Terry Shannon, an analyst at Illuminata, Inc. in Ashland, Mass., said the OpenVMS group at Digital hopes the free DCE licenses will help add credibility to the company's attempt to position the venerable operating system as an open system. He agreed with Lynch that comparing OpenVMS and DEC OSF/1 "may not be as valid as comparing OSF/1 to the other Unixes out there."

The bundling will take effect when Digital ships a new DCE runtime release for the Alpha AXP and VAX versions of OpenVMS next month, according to Sorenson. Digital will charge fees for the OpenVMS DCE cell directory and security servers due in May, he added.

RISC systems

NetWare not top priority for Alpha

By Craig Stedman

While Digital Equipment Corp. is among the RISC systems vendors itching to get their hands on Novell, Inc.'s Processor Independent NetWare, Digital executives said it will not be treated as strategically as the three operating systems now supported on the company's Alpha AXP hardware.

William Strecker, chief technology officer and vice president of engineering at Digital, said after a recent technical strategy overview that the Alpha version of NetWare will lag in importance behind OpenVMS, DEC OSF and Microsoft Corp.'s Windows NT following its scheduled shipment late this year.

Old identities

Digital still views NetWare mainly as "a linking mechanism" for file and print services, "not so much as an application environment," Strecker said. "Novell is trying to make it into more of an application environment, but it's not clear that they'll be successful."

Digital's intention to keep its triumvirate of key operating systems from becoming a quartet is wise because users are already complaining that the three-pronged strategy is too confusing, analysts said. However, they noted that NetWare on Alpha could still be a useful and lucrative tool for Digital.

"Processor Independent NetWare won't be more than an interesting product for Digital because it won't have the corporate backing," said Chris Christiansen, an analyst at International Data Corp. in Framingham, Mass. Digital "has traditionally had a blind spot when it comes to NetWare," he added.

Sales potential

However, Christiansen said Digital may end up selling a good amount of Alpha machines running NetWare, in spite of the lower strategic commitment. "The sales and marketing people could take to it more enthusiastically, and they're the ones that put products in the hands of users," he said.

Wes Melling, an analyst at Gartner Group, Inc. in Stamford, Conn., said NetWare on Alpha could be "a door-opener" into accounts that use the Novell software. "From the standards of somebody who's used to VMS, NetWare isn't much" from a technical perspective, Melling added. "But now at least Digital is mature enough to be saying that it's OK to do ugly things if they make you a lot of money."

Seeking a cure

Some users said they are looking at the possibility of implementing NetWare on Alpha boxes to connect existing NetWare LANs to VAX or Alpha installations.

"We have a lot of NetWare PCs out there, but we're bringing in VAX and Alpha systems, too," said Hayes Milliman, an information services analyst for the Orange County Sanitary District in Fountain Valley, Calif.

William Leeman, systems manager at Magnum Computer Corp. in Tucson, Ariz., said he might have a similar interest in Processor Independent NetWare if Magnum migrates from VAX to Alpha. One unanswered concern, though, is whether an Alpha box would have to be dedicated exclusively to NetWare, he added.

Fax-on-demand grows

CONTINUED FROM PAGE 59

Resources Corp., a consulting company that is located in New York.

"The third-party services are growing because they add value and help target fax distribution; however, I estimate that they represent less than 1% of the total fax traffic," he said.

Typically, a third-party fax service costs about 50 cents per page. The in-house costs are difficult to predict because they include the telecommunications costs, handling and printing, Winther said.

Coming to a system near you ...

Fax-on-demand services are an early sample of the impending merger of fax, electronic mail, voice and multimedia technologies this year, according to Chad Hill, spokesperson for International Computer Facsimile Association (ICFA).

To help the integration, ICFA members (mostly fax vendors) are working on a binary file transfer (BTF) standard that will let users send by fax editable documents rather than bit-mapped images.

Sending faxes in BTF format reduces the length of the phone call and saves money because the files are smaller than typical fax files. Also, if the computer software at the other end of the line supports BTF, users can send multimedia as well as fax, Hill said.

Vendors such as WordPerfect Corp., Optus Corp. and ASP Computer Products, Inc. are currently working on a BTF standard.

Meanwhile, Microsoft Corp. is going in its own direction with its At Work technology, which uses a proprietary BTF technique to let office devices communicate.

How Did World Airways Re-route Their PC Network To TCP/IP?

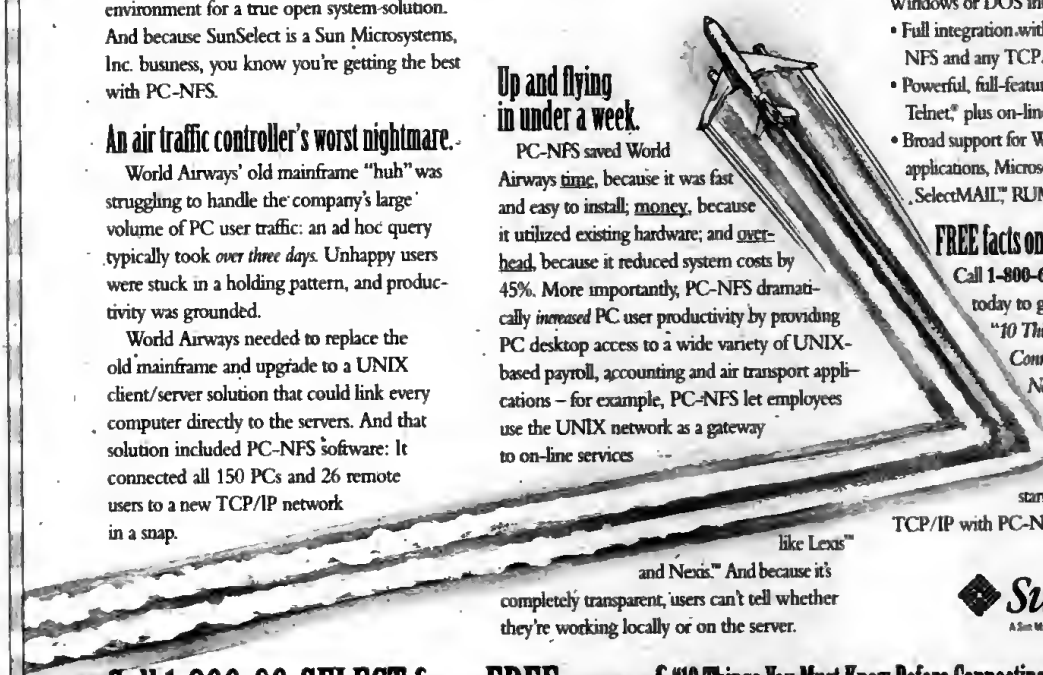
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PC-NFS saved World Airways time, because it was fast and easy to install; money, because it utilized existing hardware; and overhead, because it reduced system costs by 45%. More importantly, PC-NFS dramatically *increased* PC user productivity by providing PC desktop access to a wide variety of UNIX-based payroll, accounting and air transport applications – for example, PC-NFS let employees use the UNIX network as a gateway to on-line services like Lexis™ and Nexis.™ And because it's completely transparent, users can't tell whether they're working locally or on the server.

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Vendors stretch remote LAN capabilities

By Joanie M. Wexler

A predicted trend is materializing toward products that provide remote osers with two kinds of access to corporate LAN internetworks to accommodate application type.

At least two vendors — Microcom, Inc. and Shiva Corp. — recently introduced products that allow nsers to toggle between the "LAN extension" and "remote control" forms of access software. The remote control function lets users control their office PCs from another site and view activity such as electronic mail on their remote screens.

LAN extension technology — also known as "remote node" — allows users away from the office to become participants on a corporate LAN with rights equal to those locally attached.

Typically, products have supported one or the other function, though analysts predicted last spring that the two would merge as users' application characteristics became more varied and remote workers became more widespread [CW, May 3].

> Forrester Research Inc predicts that there will be 25 million remote professionals by 1995 and that the remote access market will generate $2.8 billion in revenue by 1997

Microcom in Norwood, Mass., said it will ship this month LANexpress, a Windows-based product that blends its Carbon Copy remote control software with LAN extension software. As with Shiva's new Windows-based product, merging the two technologies means that with one phone call, users can choose on the fly to participate as a remote LAN node or control their PCs without having to exit one operating system to reconnect.

Fit for files

Remote control is suited for file-based applications such as databases because processing can be done at the corporate site rather than requiring the application to travel over relatively skinny wide-area links and slowing performance, users and analysts said. LAN extension is generally more suited to message-based applications.

Burlington, Mass.-based Shiva said it will add in the first quarter Symantec Corp.'s PCAnywhere remote control software to its NetModem/E LAN extension product. Upgrades for existing NetModem/E customers cost $75 per customer, regardless of the number of units being upgraded. The list price for the upgraded stand-alone product is $1,699.

Microcom's $3,499 to $7,999 LANExpress bundles heavy-duty compression, support for Ethernet or Token Ring LANs, bridging, Novell, Inc. IPX routing and eight V.Fast modems into an on-premises server device, said Mike Reed, director of LAN access product marketing at Microcom.

KFC Corp. in Louisville, Ky., is testing Microcom's modem-based product because it has previously had to set up different dial-in methods for users wishing to access a mix of Novell NetWare, Unix and IBM mainframe hosts.

"Now there is one dial-in method for any resource" with functions suited for different types of applications, said Kent Westphal, senior network engineer.

Dow Jones Telerate in Jersey City, N.J., has been testing LANExpress as an alternative to a routing solution, said Mark Vivanco, network manager. "But our users didn't need full-time connectivity or real-time information, and that alternative would have been too expensive," he said.

He said the dual remote-control/node capability is useful because "the Save command with remote node is too long" for file-based applications. "We'll use that for people to call in and check [E-mail]."

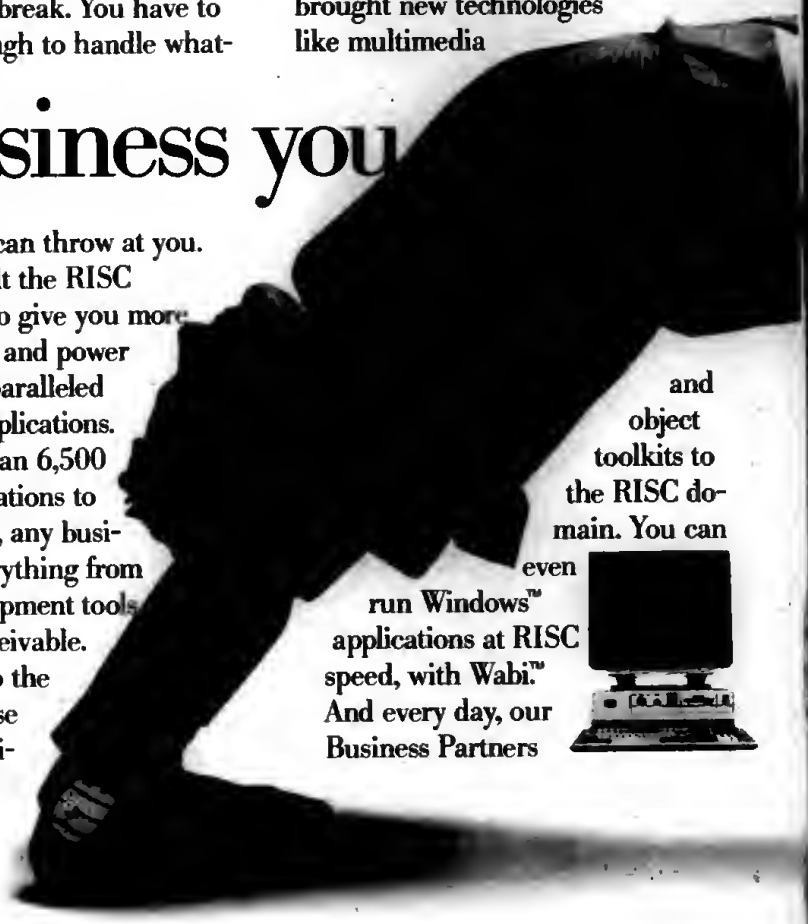
Vivanco pointed out that the era of far-flung workers raises a question about licensing arrangements. Running applications both on a user's office desktop and at his home means dual copies of the software, which gets expensive.

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[redacted]

Frye Computer Systems, Inc. has introduced the SUDS Wide-Area Network Distribution (WAND) module.

The product was created for Version 1.5 or later of The Frye Utilities for Networks Software Update and Distribution System (SUDS). According to the Boston company, SUDS WAND automatically routes software updates throughout a Novell, Inc. network, regardless of size.

The product provides centralized reporting and management and standardization of software and file distribution.

The product includes destination lists, distribution routing and fan out, reporting and bundle inspection security features.

The SUDS WAND module costs $1,495.

▶ *Frye Computer Systems*
(617) 451-5400

Ipswitch, Inc. has introduced Vantage/IP, TCP/IP software for OS/2.

According to the Wakefield, Mass., company, the software includes a complete set of client and server OS/2 and DOS applications. Without modification, Vantage/IP's application programming interfaces can be used to run an assortment of third-party TCP/IP applications.

The product can transfer data at speeds exceeding 500K byte/sec. and comes equipped with a full suite of TCP/IP utilities for file transfers, terminal emulation, mail and backup.

Vantage/IP runs on any PC with a 386, 486 or Pentium processor and requires 120K bytes of memory.

Vantage/IP costs $395 for a single user. A five-pack is priced at $1,475, and a 10-pack is available for $2,565.

▶ *Ipswitch*
(617) 246-1150

BlueLine Software, Inc. has introduced NetWare for MVS/SNA Router and NetWare for MVS/E-Z Access, two connectivity products.

According to the Minneapolis company, NetWare for MVS/SNA Router offers access to authorized LAN users who want to transfer files to and from the mainframe over an SNA network.

NetWare for MVS/E-Z Access enables users to transparently route information among LANs over the SNA network, making different LANs display as a "virtual" LAN to the user.

A permanent license for NetWare for MVS/SNA Router and NetWare for MVS/E-Z Access each starts at $18,000.

▶ *BlueLine Software*
(612) 542-1072

National Semiconductor Corp. has introduced 100M bit/sec. Fiber Distributed Data Interface (FDDI) adapters that run over fiber or unshielded twisted-pair cabling in Extended Industry Standard Architecture (EISA) environments.

According to the Santa Clara, Calif., company, the FDDI adapters were designed for Novell, Inc. NetWare Versions 3.12 and 4.01.

The FDDI EISA implementation, called the InfoMover NF3500 FDDI adapter card, is a 32-bit bus master adapter with data transfer rates of 33M bit/sec. in burst mode. The InfoMover NF3000 FDDI adapter card, the XT/AT bus version, provides a 25M bit/sec. rate.

The InfoMover NF3910 FDDI dual-attachment card occupies a separate slot beside the adapter card and allows dual cabling for critical runs, providing higher reliability.

Prices range from $995 to $1,995.

▶ *National Semiconductor*
(408) 721-5000

Product shorts

Micom Communications Corp. has added its Dynamic Bandwidth Allocation, Speech Reduction and Silence Suppression technologies with Sprinter, a device that integrates remote data/voice communications. Companies can piggyback free phone and fax capabilities onto new or existing data or LAN/wide-area network connections with Sprinter. Cost: $1,450. Micom Communications, Simi Valley, Calif. (805) 583-8600. ... **Meridian Technology Corp.** has introduced TCP HostPrint, a Novell, Inc. NetWare Loadable Module designed for bidirectional printing. It lets users print from NetWare to Unix and vice versa. One copy of TCP HostPrint gives users access to available printers on NetWare and TCP/IP networks. Cost: $595. Meridian Technology, Chesterfield, Mo. (314) 532-7708.

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Firms set to mine for supercomputing gold

Retailers and others join research laboratories in exploring the use of high-performance computers

By Ellis Booker

Some of the country's top retailing, financial and transportation firms are ready to kick the tires of high-performance computers, perhaps joining the research community as supercomputer users.

Specifically, a number of these companies are looking to do "data mining" on massively parallel processing (MPP) systems as a way to quickly churn through gargantuan customer databases of sales or inventory data.

"Many commercial users are telling us that they will soon be receiving, on a daily basis, close to one terabyte of information," said Irving Wladawsky-Berger, general manager of IBM's Power Parallel Systems unit.

A familiar face

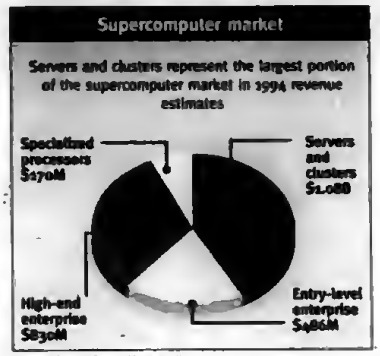
One reason users seem more ready to accept these computing architectures, which were once found only in technical and scientific settings, is the fact that their familiar systems vendors (IBM, Unisys Corp., NCR Corp., Hewlett-Packard Co. and even traditional vector supercomputer vendors such as Cray Research, Inc. and Convex Computer Corp.) have embraced the MPP approach.

This year, for instance, IBM is expected to introduce its Parallel Query Server and Parallel Transaction Server, both adjuncts to the IBM ES/9000 mainframe. Convex's MPP box, based on the HP PA-RISC architecture, will also ship this year.

David Frankel, director of technology at Smaby Group, Inc., a market research firm in Minneapolis, said the market for data mining today is about $500 million.

"When the database is large — and in my mind, that's when it's in the 100G-byte or above range — you need these systems," he said.

Frankel noted that NCR subsidiary Teradata Corp. has offered its proprietary database technology to data mining customers for years.



"[NCR] is doing about $250 million annually on large systems sales," Frankel noted, adding that this figure is equal to the combined annual revenue of all MPP vendors.

Something to hope for

What is new about the MPP market is the potential for using commercial, scalable databases. Leading database vendors, led by Oracle Corp., have embraced the concept.

Oracle, arguably the most bullish among these providers, is due to release Oracle 7.1 with MPP extensions early this year. Oracle 7, which was introduced in June, has already been shown to run on a wide range of MPP systems.

Likewise, Sybase, Inc. is expected to port its Navigation Server to parallel systems.

A buzz about cluster

Meanwhile, scalable/parallel server and cluster technology has garnered a great deal of attention by vendors and users alike.

Cluster computing can essentially link unused or underused desktop resources into loosely coupled parallel networks across high-speed networks.

According to Smaby Group figures (see chart), this segment of the market will be more than $1 billion this year, and it is responsible for the supercomputing industry's revenue finally showing an uptick after several flat years.

Finally, there will be announcements this year of traditional vector supercomputer systems. Convex will ship its C4, and Cray Research will have its Jedi and Jedi Plus — successors to its Y/MP-EL — and an entry-level, air-cooled system.

Mark Halper

Bips' paradox



Say hello to "Bips" Birnbaum.

Back in 1980, Bips, then known as Joel, left IBM for Hewlett-Packard, taking with him a firm belief in the importance of RISC that he and his IBM cronies had been unable to instill in their previous employer.

They had labored in the IBM labs to produce a RISC chip seemingly deployable in a commercial computer system but failed to convince the now infamously close-minded suits in Armonk, N.Y., that RISC's time had come.

So off Joel went to sunny Palo Alto, Calif., where the denizens of the dawn of a new age warmly embraced his, well, risky ideas and put him in charge of RISC development.

Birnbaum's cross-country trek explains a lot about why HP, now the country's second largest computer maker, is practically the only hardware maker consistently reporting handsome

Halper, *page 68*

Databases

Users line up for latest DB2 version

By Johanna Ambrosio

■ Users are upgrading to the newest version of IBM's DB2 because they can get instant gratification and also position their shops for the coming world of distributed databases.

For the short term, Version 3.0 offers performance improvements that will help conserve disk space, for example, or better the time in which end users' queries are answered. But for down the road, the version also implements distributed two-phase commit.

With this feature, a mainframe running DB2 can ensure the integrity of data it receives from another mainframe running DB2.

If something goes awry with the process — a communications line fails, for example — DB2 will back out of the transaction, and data will be restored to the state it was in before the process began.

Mass migration

Given how quickly most DB2 shops usually upgrade to the newest version, at least half of the 6,500-strong DB2 installed base will likely move to Version 3.0 in the next year, said Tom Lockwood, DB2 brand manager. Already, some 80% are on Version 2.3, the immediate predecessor to Version 3.0.

Shaku Atre, president of Atre Associates, Inc. in Port Chester, N.Y., said that most users will likely make the switch to 3.0 "primarily for performance improvements. That will be the No. 1 reason."

The distributed features will be secondary because "most users still aren't doing distributed database," she said. "They're distributing the access, but not the data itself."

Still, some customers are looking down the road to when they will begin distributing data.

Six-month window

"With new releases, we tend to hold off on production for six months to let other people find the bugs," said Charles Seiler, a systems database administrator at Gulf States Toyota, Inc. in Houston. "But we want to do feasibility studies and make sure it does everything we want it to do. We want it to be ready when we are."

Similarly, David Beulke, DB2 database manager at Spiegel, Inc. in Downers Grove, Ill., said that both performance gains and data distribution appeal to him. "We really wanted to jump on this release," he said. Features of special interest to him include built-in data compression and new performance-tuning options.

Spiegel is rolling out applications based on IBM's database that runs under OS/2, and connectivity to the mainframe data is key. Beulke said that Spiegel will likely have Version 3.0 in production by the spring.

Connection complete

Version 3.0's immediate predecessor, Version 2.3, was delivered in March 1992. It was the first release to adopt Distributed Relational Database Architecture, IBM's plan to connect to any database that uses SQL.

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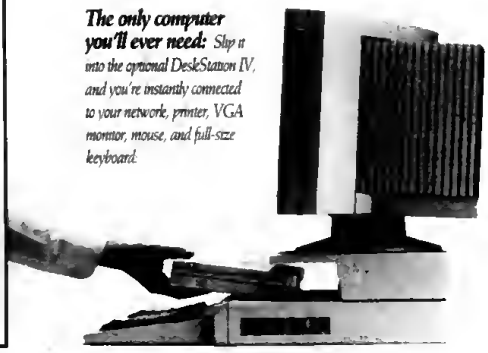
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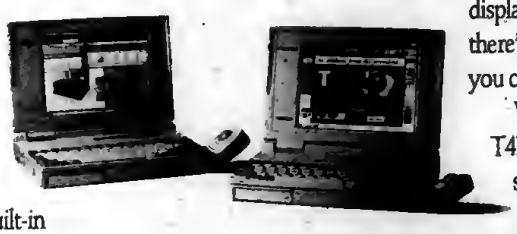
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Drug data fails to connect

By Mitch Betts

A few years ago, medical researchers heard reports of people dying from a bad batch of the drug protamine. But their efforts to trace the problem were frustrated by inadequate hospital information systems.

So Thaddeus H. Grasela, head of the Drug Surveillance Network and assistant professor of pharmacy at the State University of New York at Buffalo, decided to find out just what the problem was.

His recently released study of the IS capabilities at 166 hospitals found that only 30% were able to link drug prescription data to patient outcomes, a key step in monitoring patients for adverse drug reactions.

Only 16% of the hospital pharmacy databases showed the reason for the drug therapy, only 8% could provide the name of the drug's vendor, and only 3% could provide the lot number of an administered drug.

"Hospitals are buying generic drugs from whichever vendor has the lowest price on a month-to-month basis. They would be hard-pressed to guess which vendor supplied the drug administered to a particular patient, let alone provide the lot number," Grasela said.

Bar codes would help

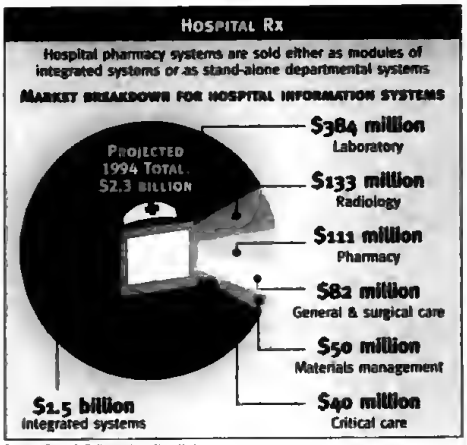
Grasela acknowledged that asking doctors and nurses to collect detailed data every time they administer a drug could become cumbersome, but he said future systems could include pen computers with bar-code readers to capture the name of the drug vendor and the lot number.

The more fundamental problem, Grasela said, is that various departments in each hospital have implemented proprietary systems on a piecemeal basis, making it tough to link pharmacy data and outcomes data. Another problem is that some hospitals lack the funds to integrate the disparate systems, he added.

Roughly half of all hospital pharmacy systems are standalone, departmental systems; the other half are modules of larger, hospitalwide information systems, industry observers said. Hardware platforms range from mainframes and minicomputers to PCs.

A third problem with hospital systems is the lack of standardized data elements that would permit data integration, according to Larry Pawola, senior vice president at Sheldon I. Dorenfest and Associates Ltd., a Chicago consultancy specializing in health care IS. Various pharmaceutical databases give different names to the same drug, for example.

Overcoming these barriers to the use of IS for tracking adverse drug reactions is an important goal, Grasela stressed. Although drugs are studied intensively before they are marketed, unforeseen adverse reactions may occur once the drug is used by a larger population of patients, many of whom are much sicker than those who participate in clinical trials.



Source: Frost & Sullivan, Inc., New York

One hospital that can link "adverse drug events" to patient outcomes is LDS Hospital in Salt Lake City. A study using data from the hospital's leading-edge information system, dubbed Help, found that patients with adverse drug reactions had to stay in the hospital an average of two extra days because of the drug problem, at an additional cost $1,939 per patient.

Overall, the 569 adverse drug events at LDS Hospital boosted its costs in 1992 by $1.1 million, making the prevention of adverse drug events a promising area for cost containment, the study said

Halper

CONTINUED FROM PAGE 65

quarterly profits and sales growth.

HP had struggled through its RISC learning curve years ago. IBM, Digital and other archrivals are still feeling the pain of the early going.

Birnbaum strikes again

Now a senior vice president and head of research at HP, Birnbaum is at it again, explaining his new moniker and giving rise to the Bips Birnbaum paradox. What he is talking about these days has millions of HP RISC users both spellbound and apprehensive.

You see, his new project is a 64-bit, "post-RISC" architecture said to yield performances of billions of instructions per second (BIPS). Out with the MIPS, in with the BIPS, Birnbaum's 64-bit plans anger performance leaps known spiritually as joyous and technically as quantum. But there's a catch.

While users hope that HP indeed minds the attendant migration challenge, skeptics noted that the job is far from a fait accompli.

As Birnbaum's own project designation suggests, "post-RISC" is not RISC. Well, it is, but only sort of. And that has users Running Into Serious Consternation over whether HP will tend to that old nemesis of line evolutions: migration of software from present systems to future boxes.

Post-RISC uses some RISC elements, some superscalar elements (as HP's PA-RISC does now) and something called very large instruction word (VLIW) technology.

Described briefly, VLIW is a way of permitting more instructions per cycle by using software to monitor dependencies and conflicts. It provides rich internal parallelism.

VLIW is not new, but no one in the microprocessor community has yet offered it commercially. HP licensed the technology sometime in the mid-1980s from a couple of now defunct companies: Cydrome and Multiflow.

Good migrations

Birnbaum has stated that HP is "exploring a number of technical issues related to the migration from the current superscalar RISC architecture, and . . . seamless migration is mandatory in our minds and is a dominant part of our research."

While users hope that HP indeed minds the attendant migration challenge, skeptics noted that the job is far from a fait accompli.

Linsey Gwennap, editor of the "Microprocessor Report," was skeptical.

"You have to change the type of instructions you're using, you have to break the type of compilers you're using, and that's going to break your compatibility," he observed.

Gwennap said he and the HP user community are looking for further proof, and HP realizes the enormity of the task at hand. The company has given itself three years to deploy the chip, slotting it for around 1997 in the HP processor timeline.

Good luck, Bips.

Halper is a *Computerworld* West Coast senior correspondent.

Vendors boost consulting support

By Gary H. Anthes

■ While software vendors are increasingly offering professional services to augment their software licensing business, they are in turn developing systems to support their consulting activities.

For example, Legent Corp. has signed up more than 15 companies as subscribers to its Masdex benchmarking service, by which a customer provides detailed system performance, cost and other data for analysis and comparison with other customers' data. Much of the data can be relayed automatically and transparently from installed Legent products.

The collected data is compared with 30 indexes derived from other data centers, and the results are reported back in charts and reports in five areas — asset management, resource usage, cost recovery, service quality and personnel use. Although the analyses are based on large quantities of extremely detailed data, the results are typically presented to senior managers, Legent said.

"We can go in for a couple of days and extract huge amounts of detailed data," said Tom Shea, director of consulting services at Legent. "Then we can show the CIO or CEO how effectively they are really using the equipment based on a model developed for their organization."

Bargaining chip

The comparative analyses are useful in pinpointing areas where improvements need to be made, and they can also provide companies with leverage in negotiating with hardware and software vendors. For example, reports from Legent on two data centers run by the U.S. Postal Service showed that the service was paying a very competitive price for hardware but had room to negotiate better rates on some of its 400 software products (CW, Jan. 10).

Last year, Software AG of North America, Inc. set up a "Rightsizing Center," a place where, for $1,500 to $2,500 per day, users can get hands-on experience with major platforms for distributed computing, such as Unix, OpenVMS, Windows, OS/2 and Microsoft Corp.'s Windows NT boxes and connectivity tools from a variety of vendors.

The center allows users to test different approaches and port applications faster and more easily than would normally be possible at their own sites, according to Software AG.

John Logan, executive vice president at Aberdeen Group, a Boston-based consultancy, said the center is unique in presenting a hardware vendor-neutral environment in which users can try major hardware and operating systems approaches to client/server computing.

"I don't know of any other software supplier with that range of hardware and operating systems that will allow users to learn in a laboratory what the product capabilities will be," Logan said

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University makes multimedia move

By Johanna Ambrosio

■ The terms "mainframe" and "multimedia" do not often occur in the same breath, but a California university is hoping to change all that. It has recently embarked on a scheme to deliver multimedia courses on demand to far-flung students, including those in corporate America.

Although the plan, announced last week , will take a few years to reach its full potential, California Polytechnic State University will partner with vendors and other colleges to develop the necessary technology and courses. The basic idea is to teach classes in a way that students weaned on television and video games can better learn — with sight, sound and special effects.

Bakersfield College in Bakersfield, Calif., has been using multimedia in its psychology classes for three years and is swapping some of its courses with the ones Cal Poly is developing.

"We decided to teach the way that human beings learn — with multisensory tools," said Rick Wright, president of Bakersfield College. "You can take a fairly abstract concept and demonstrate it" vs. merely telling students about it. In his class, for example, Wright uses a CD-equipped PC to show how neurons transmit impulses.

Cal Poly, with some 15,800 students on its campus in San Luis Obispo, Calif., hopes to take that idea a step further. It is building the communications infrastructure to electronically send the multimedia courses out to elementary and high schools as well as to users in corporate America and other colleges in California and elsewhere.

A newly installed IBM ES/9000 Model 732 mainframe will act as a "mega-server," holding full-motion video, sound bytes and other components of multimedia classes, said Art Gloster, Cal Poly's vice president of information systems. That information in turn will be downloaded to local servers that might include Hewlett-Packard Co.'s HP 9000 or Tandem Computers, Inc. machines. Those computers can then be accessed by individual workstations plugged into special ports in dorm rooms, classrooms and other locations on campus.

Cal Poly is using IBM software to help get course information between the mainframe and non-IBM platforms, including course-authoring systems from Apple Computer, Inc., Gloster said.

With that problem nearly solved, the university will then have to address the communications infrastructure. "We're running this on a Tokon Ring, and it peaks out at about 10 video streams," he said.

To increase the number of simultaneous users beyond 10, the school will beta-test Asynchronous Transfer Mode as a high-capacity transmission method.

By the the fall, Cal Poly will also probably wire its dorm rooms so students can receive games and other forms of entertainment in their rooms. Students will need to buy some sort of multimedia workstation — probably an IBM ThinkPad or an Apple PowerBook.

However, it will not be enough to just pump out the classes and expect students to learn, Gloster said. It is equally critical to allow students to interact with other learners and faculty. Therefore, the university is bringing in Lotus Development Corp.'s Notes "so students can exchange ideas."

Once all the pieces are in place, Cal Poly and its partners will offer customizable multimedia classes to corporate America.

For example, Wright said, the universities might develop a class on environmental regulation in California that could be fed into a company's mainframe or other kind of computer for a fee.

Ad libbing

Teaching with multimedia does take some getting used to. Liz Rozell, division chairman for mathematics and computer studies at Bakersfield, has been using multimedia in her statistics class. "Because there are spontaneous things that come up — minor things that students don't understand — you need to be able to override the presentation you have on the screen," she said.

They now have a pad that plugs into the computer that the presenter can write on. "It's hard at first because you can't really see what you're writing," Rozell said. Another requirement is the capability to go back and forth between the "canned" presentation and PC packages such as Microsoft Corp.'s Excel, which is "real easy to do in a Windows environment," she said.

Client/server

Trane again chooses outsourcing track

By Mark Halper

When air conditioning vendor The Trane Co. had a chance to walk away from its outsourcing deal with Electronic Data Systems Corp., it had a choice to make: Should it bring processing back in-house or assign the work to another outsourcer?

The Tyler, Texas-based division of American Standard, Inc., decided it would be prudent once again to outsource. The reason: Trane was planning to migrate to client/server systems in three to five years and did not want to invest in mainframe capacity it would eventually no longer need.

Also, the outsourcer Trane selected, The Genix Group in Dearborn, Mich., agreed to terms under which fees decrease as Trane's mainframe reliance lessens.

"It's a situation that lets us scale back our requirements as our actual usage scales back," said Chip Lombardo, information systems manager at Trane's residential division, which last spring cut over processing to Genix's Pittsburgh data center from an EDS data center in St. Louis.



Trane's Chip Lombardo: *One division made the switch to Genix in about seven weeks*

Lombardo declined to estimate the value of the contract, which will vary according to how soon his division and Trane's La Crosse, Wis.-based commercial division move off the Amdahl Corp. and IBM mainframes now supported by Genix.

Paul Huchko, director of sales at Genix, which was already providing outsourcing to parent American Standard, said the deal is worth a potential of approximately $10 million over the course of the contract, depending on the pace of Trane's client/server move.

"As their client/server costs go up, their mainframe costs go down, so they're not burdened with duplicate costs," Huchko said.

The contract does not prescribe a timetable for a reduction in fees and services, he explained, noting that "it's triggered by their business needs — they pay for what they use." Genix is pricing its services based on conventional outsourcing yardsticks of CPU cycles and direct-access storage devices, Huchko explained.

Both Lombardo and Huchko said that while Genix is not currently assisting in Trane's client/server migration, it may eventually do so.

Lombardo said Trane is conducting its own in-house move to client/server, and it plans to first migrate financial systems because there are more software packages readily available in the financial area. Ideally, the company will complete its entire migration within three years, he said.

Trane plans to implement Unix hardware and software but has not yet committed to brands, Lombardo said. It currently uses a mix of IBM RS/6000 and Hewlett-Packard Co. 9000 boxes for manufacturing requirements planning and engineering, respectively, he said.

Lombardo said he does not plan to install Microsoft's Corp.'s Windows NT as an enterprisewide system because "while it is worth considering because of Microsoft's marketing clout, I don't want to be the one to shake it down for them."

Meanwhile, Trane's switch to Genix blew a little cold air on the old outsourcing maxim that says it is difficult to change outsourcers midstream.

Contractual terms, which the parties will not disclose, let Trane walk away from the EDS deal, Lombardo said.

Weekend warriors

Lombardo said the residential division made the switch in about seven weeks, coming on-line with Genix during the Memorial Day weekend. The commercial division was live on Genix about five weeks later.

For its part, EDS copied tapes in St. Louis. Genix flew tapes of the operating system, applications and user data to its own data center in Pittsburgh about three weeks before going live.

Genix and Trane then tested operations over the T1 backbone lines connecting the Pittsburgh center to various Trane sites. On one weekend, Trane used about 20 of its IS personnel for testing; the following weekend, it asked about 50 end users to come in on for a trial run.

By the third weekend — Memorial Day weekend — Genix flew in updated critical tapes, sent backup tapes by truck and together with Trane personnel conducted one more round of tests. When company employees reported to work following the holiday, the switch was transparent, according to Lombardo.

"By Tuesday morning, when folks came in, when they logged on to the system, they logged on to Genix in Pittsburgh rather than to EDS in St. Louis," Lombardo said.

Breaking up

Trane originally contracted with McDonnell Douglas' old outsourcing group, which EDS acquired soon after the outsourcing arrangement began about four years ago.

Trane parted ways with EDS with 18 months remaining on a five-year contract. Lombardo said the two companies hit a "trigger point" that contractually permitted early termination, which occurred with a "mutually agreed upon payment."

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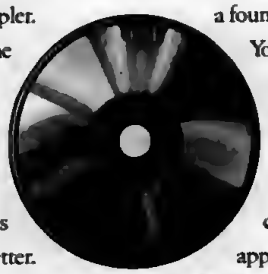
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Harvest Software, Inc. has announced Version 2.1 of the Harvest software for transaction applications running on IBM's AS/400 platform.

According to the Sunnyvale, Calif., company, Harvest Builder is a full-function set of tools designed to create more than 500 types of Harvest forms.

Two versions are available. Harvest Builder supports a fax line for testing and constructing applications that support incoming faxes and outgoing responses. Harvest Builder Lite offers the same capabilities as Harvest Builder and lets users create and test up to 10 form types. It also provides users with the ability to automate inbound fax transactions only.

Harvest Builder costs $20,000 per license; Harvest Builder Lite costs $12,500 per license.

▶ *Harvest Software*
(408) 245-2600

Pennant Systems, the IBM Printing Systems Co., has announced the IBM 3935 Advanced Function Page Printer and the IBM 3900 Advanced Function Duplex Printing System.

According to the Norwalk, Conn., company, the IBM 3935 Advanced Function Page Printer is an intermediate-speed page printer designed to meet IBM AS/400 production printing, departmental and distribution needs.

The IBM 3900 Advanced Fuoctioo Duplex Printing System is a continuous forms system that prints up to 300 impressions per minute. It features Pennant's Advanced Function Common Control Uoit, which includes the Advanced Function Image and Graphics and Decompression Performance Enhancement.

The IBM 3935 Advanced Function Page Printer costs $38,995. The IBM 3900 Duplex is available for $625,000.

▶ *Pennant Systems*
(203) 849-6844

Btscom, Inc. and E. S. D. Computer Services have announced Release 5.0 of FaxCom for AS/400, a computer/fax product.

According to Biscom, located in Chelmsford, Mass., FaxCom for AS/400 provides a more flexible user interface and a richer application programming interface for developers.

The product enables IBM AS/400 users to fax directly from any AS/400 terminal, complete with overlaid business forms, signatures and other business graphics.

Users can custom-design page layouts and create their own cover pages.

Pricing starts at $5,995 for a single-line system.

▶ *Biscom*
(508) 250-1800

X-Stor Corp. has introduced the ESS 2000 Solid State Disk, a high-performance storage offering.

According to the Jacksooville, Fla., company, the product was designed for processors that require their storage devices to respond at memory-like access speeds.

ESS 2000 can be used for open and proprietary systems and provides users with instant access to their data by eliminating rotational latency and seek-time delay, which slows productivity.

Features include a 400 msec access time, a 12.5M byte/sec. data transfer rate and an integrated data retention system to protect data against power loss and capacities of 32M bytes to 1G byte.

Base unit pricing starts at $10,995.

▶ *X-Stor*
(904) 296-9330

Braintree Technology, Inc. has introduced Governor Version 2.0, a product intended to manage OpenVMS user privileges.

According to the Norwell, Mass., company, Governor is a flexible tool that can grant and restrict activation of tasks or images, regardless of privilege allocation.

Features include an improved menu interface with on-line help, client/server command execution, validated parameter passing, "allowed word support," embedded commands and parameters, lexical function and symbol support and a reduced-size database format.

Prices for Governor Version 2.0 range from $2,000 to $7,000, depending on CPU.

▶ *Braintree Technology*
(617) 982-0200

Product shorts

Industrial Computer Corp. has announced The Santa Cruz Operation-based Unix version of Shop Floor Data Manager, a flexible, high-performance manufacturing execution system for discrete, repetitive and mixed-mode manufacturing. The product can be used for organizations needing cycle time and cost reductioos, complete product/component traceability, quality and yield improvemeots and standardized procedures for International Standards Organization 9000 certification. Cost: starts at $80,000. Industrial Computer, Atlanta, Ga. (404) 255-8336.... **Technipower, Inc.** has introduced SNS 2.0, a combination software and cable package that connects a computer to a Technipower uninterruptible power supply (UPS), allowing the computer to track power failures and monitor UPS operation. The product plugs into a serial port on the server and is fully compatible with remote-control software systems. Cost: $149 for a single unit. Technipower, Danbury, Conn. (203) 748-7001.... **Advanced Digital Information Corp.** has introduced the Optical Data Library (ODL), an addition to the company's Virtual Library Systems (VLS) series of automated media changers. The product can select from 22 disks in a magazine by using the company's proprietary FastPort magazine design. The VLS-ODL is based on a dual-capacity 3½-in. rewritable optical drive and provides an unattended capacity of 5.6G bytes. Cost: starts at $7,400. Advanced Digital Information, Redmond, Wash. (206) 881-8004.

Briefs

Digital adds chips to stock

Digital Equipment Corp. last week introduced additional chips supporting the Peripheral Component Interconnect (PCI) bus as part of its attempt to expand external semiconductor sales. Included is the DECchip 21050 bridging device for configuring multiple PCI buses on servers that need more expansion slots than the two or three provided by a single PCI bus. The 21050 will support both Digital's Alpha AXP architecture and Intel Corp.'s microprocessors and is due to ship in volume in the second quarter. Also introduced were a pair of PCI-based system logic chip sets for Digital's DECchip 21064.

NCR cuts porting deal

NCR Corp. has signed a deal to fund the porting of insurance applications made by Policy Management Systems Corp. to run on its Unix systems. The two companies will also jointly market Policy Management's Series III software products on the NCR platforms. Policy Management currently supports its software on IBM mainframes and said development of those versions will continue as well. NCR and Policy Management initially plan to target the property and casualty sector of the insurance industry.

Cray offers discount plan

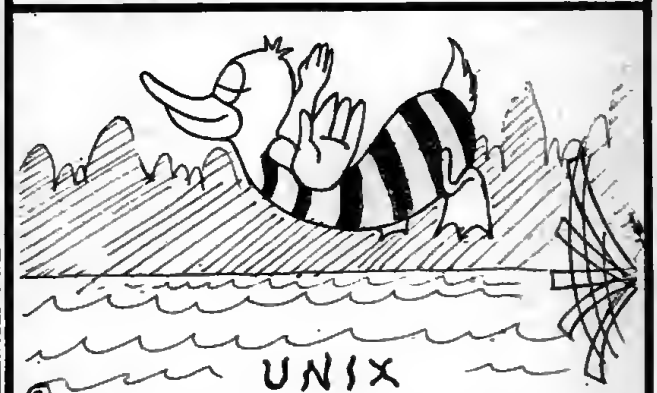
Cray Research, Inc. said customers who buy its Cray EL98 departmental supercomputer now will be able to get discounted pricing on a follow-on machine due to start shipping in volume in the first quarter of 1995. EL98 buyers will also receive priority in the delivery schedule for the next system, which Cray said is expected to be six to 12 times more powerful than the EL98 at similar price points. The company did not specify the range of discounts that will be made available under the program. The EL98 and the follow-on system would be purchased on a single contract, Cray said.

In other news, **Cray Research** said its computer scientists have discovered the largest known Mersenne prime number while running quality assurance tests on a Cray C90 supercomputer. The new prime number has 258,716 digits and is expressed as the numeral 2 multiplied by itself 859,433 times, minus 1, Cray said. Prime numbers can be divided evenly only by themselves and one; the largest known until now had 227,832 digits, according to Cray.

Data General gets results

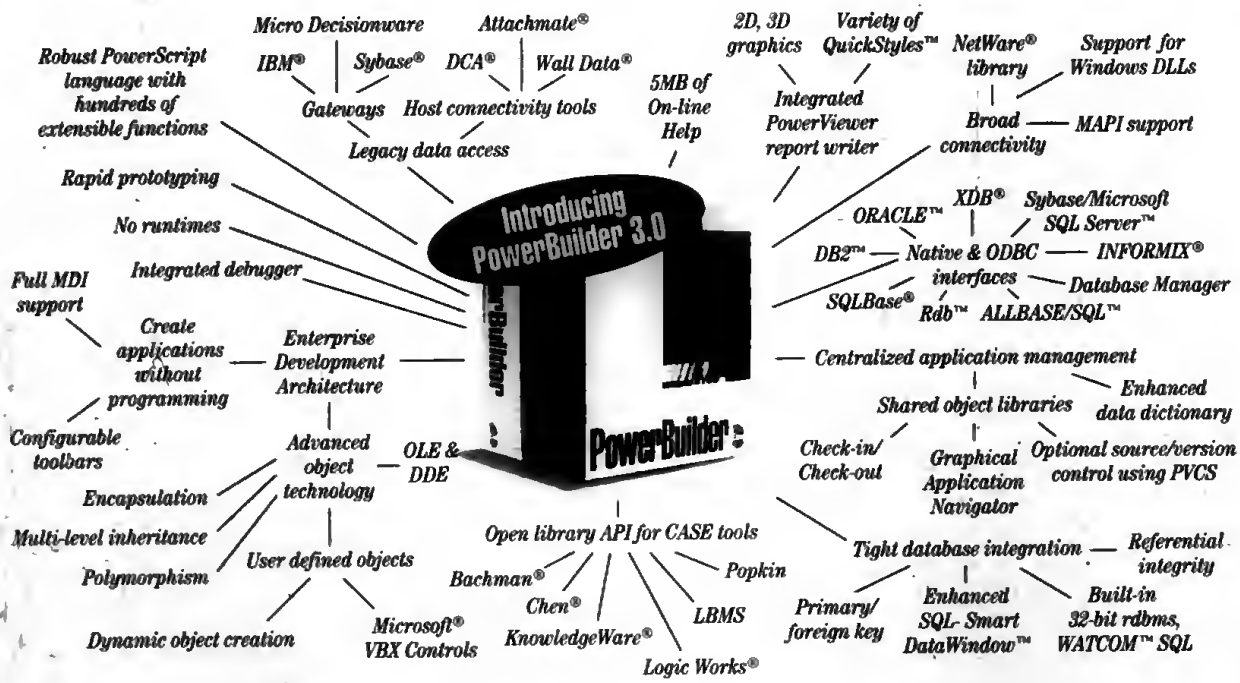
Data General Corp. disclosed TPC-A transaction processing benchmark results for its eight-processor AV 9500 and two-CPU AV 5500 servers, both of which were added to the company's Aviion systems line during 1993. The 9500 was rated at 523.84 TPC-A trans./sec. with a cost per transaction of $5,357, while the 5500 came in at 130.19 trans./sec. and $5,780 per transaction, DG said. The machines were configured with **Oracle Corp.**'s Oracle 7 database and DG's Clariion disk arrays for the TPC-A measurements.

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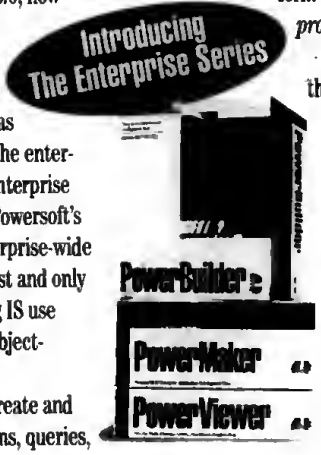
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Macintosh

Apple readies developers for Power play

By James Daly

■ With the expected introduction of PowerPC-based Macintosh models only about eight weeks off, Apple Computer, Inc. has introduced a series of developer products designed to ease the building of applications for the RISC-based PCs and servers.

Leading the charge is the Macintosh on RISC Software Developer's Kit, which includes all the tools and documentatioo necessary to build new applications or port existing applications to PowerPC, Apple officials said. The $399 kit runs oo any Motorola, Inc. 68030-, 68030- or 68040-based Macintosh and generates native code for PowerPC-based systems.

The kit also includes a C/C++ compiler, PowerPC assembler, PowerPC debugger and MacApp 3.1, an update of Apple's object-oriented application framework.

The Cupertino, Calif., company also unveiled a $39.95 PowerPC starter kit of technical documentation tbat introduces developers to the basics of the PowerPC environment. For developers who want to dig a little deeper into the intricacies of PowerPC, Apple will also offer a training course on CD-ROM called "Programmer's Introduction" for $150.

Apple will also offer CodeWarrior, the first native development environment for the PowerPC. CodeWarrior enables programmers to quickly develop applications for the PowerPC and 680x0-based Macintosh platforms using the same source-code base.

A trio of choices

CodeWarrior, from Metrowerks, comes in three versions. Gold, the most comprehensive, includes developmeot releases of C, C++ for the 680x0 Macintosh and PowerPC Macintosh, Pascal for the 680x0 Macintosh and C and C++ cross-compilers. The Silver version supports native PowerPC development only and will be released when Apple ships its PowerPC-based Macintoshes. The Bronze version supports 680x0 development only. CodeWarrior pricing starts at $399.

PowerPC development tools

- **MACINTOSH ON RISC SOFTWARE DEVELOPER'S KIT** Runs on 68030, 68030 or 68040 Macintosh and generates native code for PowerPC Macintoshes: $399.
- **MACINTOSH WITH POWERPC STARTER KIT** A primer that introduces users to PowerPC development basics: $39.95.
- **PROGRAMMER'S INTRODUCTION TO RISC AND POWERPC** Interactive multimedia CD designed as a self-paced learning tool: $150.
- **METROWERKS CODEWARRIOR** Native development environment for the PowerPC and 68oxo-based Macintosh: $399.
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POWERPC

Apple says many of today's Macintosh applications should run without modification on the PowerPC, but the real advantages of the technology will be seen on new packages specifically designed to exploit the RISC chip. Native PowerPC applications could run from two to four times faster than older applications employing emulation code, said Apple spokeswoman Betty Taylor.

Third-party developers are already working hard to bring existing applications over to the new platform. At the recent Macworld Expo in San Francisco, an additional 37 third-party developers revealed plans to ship native PowerPC versions of their applications, bringing the total to 61. David Nagel, who heads the AppleSoft system software division, said he expects to have at least 100 native PowerPC Macintosh applications within 30 days of launch.

More to come

Analysts said they expect those numbers to increase, especially with the availability of the new kits. "We're really starting to see things heat up," said Steven Eskenazi, an analyst at Alex. Brown & Sons, Inc. in New York.

At WordPerfect Corp., for example, engineers are using Echo Logic's Flashport porting tool to bring assembly code over to C, according to spokesman Dave Terran.

Other companies, such as Microsoft Corp., are using their own porting tools. Product manager Don Pickens said Microsoft will bring its Macintosh applications suite over to the PowerPC, with the rollout of native PowerPC applications of Word and Excel expected soon after the initial PowerPC Macintosh introduction.

Windows applications catch Mwave

By Melinda-Carol Ballou

Intermetrics, Inc. earlier this month began shipping a software development tool kit that creates multimedia applications for IBM's Microelectronics Division's Mwave technology platform. Priced around $500, the Intermetrics Mwave Developer's Toolkit offers a development environment for end users, independent software vendors and OEMs.

Using the tool kit, developers can write new applications or enhance existing Windows-based applications to incorporate Mwave capabilities such as voice, audio, fax modem telephony and imaging. Developers can also use the tools to program Mwave's digital signal processor (DSP).

DSP is a specialized programmable microprocessor that processes signals to real time so that signals such as voice, telephone fax or data modem will be in sync when received.

Colorful machine

Third-party software vendors said DSP platforms allow for communications management of multiple data formats.

"[DSP] is like a chameleon — one moment it can handle data communications, the next moment it can handle a fax, rendering, video or audio — because it's programmable and can manipulate anything related to signals," said Sean Shultz, vice president of product development at Trio Information Systems, Inc., a developer of communications products in Raleigh, N.C.

Shultz and other developers have been using the tool kit to provide Mwave and Mwave DSP support for their applications.

> Microsoft Corp announced in November that it will offer an API for its DSP technology.

A group at Spectrum Signal Processing, a Burnaby, British Columbia-based company that focuses on DSP PC board creation, used the Intermetrics tools to create a DSP resource manager.

"The [Intermetrics Mwave tool kit] includes all the APIs that you need for interacting with Windows — and they're the only game in town for IBM's Mwave," said Ross Mitchell, director of business development at Spectrum. "If the DSP doesn't have enough juice to handle a particular function because it's busy doing something else, the manager we were able to build [using the tool kit] will alert the user and ask them if they want to proceed or reschedule when the DSP is available."

Lots to work with

The Mwave tool kit includes components such as application programming interfaces (API), library support for C and DSP libraries, sample code and documentation. The APIs address the sending and receiving of faxes, telephone functions and management and allocation of Mwave memory and cycles. Tools include a C compiler, Mwave Assembler, Mwave Task Linker, Debugger and other Mwave functions.

According to Shultz, the Intermetrics tools offer the flexibility of tools that are heavily oriented toward engineers and allow for low-level development work, but they also provide the advantage of higher-level tools to quickly create applications because they are easier to use.

Making the transition from traditional Windows applications to incorporate the advantages of DSP is also a "natural progression" using the Intermetrics tools, he said, because the commands are similar.

Rational cultivates new version of Rose

Rational last week announced a new version of its Rational Rose software engineering tool, adding support for automated object-oriented analysis and design, and greater support for team development.

According to the Santa Clara, Calif., company, Rational Rose 2.0 facilitates communication between development team members by letting them create a representation of a software architecture and store it for future use.

Major enhancements over earlier versions of Rational Rose include support for the Booch '93 notation, a more intuitive user interface, syntax and semantic checking, integration with external configuration management systems and querying, filtering and browsing mechanisms.

Rational officials said the new version can be used with any object-oriented development language, including C++, Smalltalk and Ada.

Houston roadways turn high tech

VI Corp. aids with computerized video traffic management system

By Melinda-Carol Ballou

Transportation officials in Houston will soon have more effective sources of freeway information than the bird's-eye view gleaned from helicopters or sporadic speed traps.

By 1996, the Texas Department of Transportation in Houston hopes to have in place its computerized video traffic management system, created with the help of development tools from the Northampton, Mass., software company VI Corp.

The Texas Transportation Institute, which is part of Texas A&M University, is in the process of helping the department create real-time graphical interfaces to incorporate live video feeds from cameras installed throughout the city.

Traffic: Take 1

The institute chose VI's DataViews development tool to build applications that will control the video functions and data from cameras, said Dan Hickman, a research associate at the institute. These cameras are being installed at one-mile intervals along Houston's freeways, he said.

"We will be using these applications for traffic management, for verification of accidents, stalled cars and other problems on the highway," Hickman said.

The interfaces built with DataViews will graphically model Houston's roadways and traffic conditions on a real-time basis. The system will then allow operators to perform traffic analysis and specify traffic control.

The institute evaluated another application development tool for incorporating real-time video from SL Corp. but opted for DataViews because of its ability to prototype applications and more easily incorporate the prototypes into actual development work, Hickman said.

Live from Houston

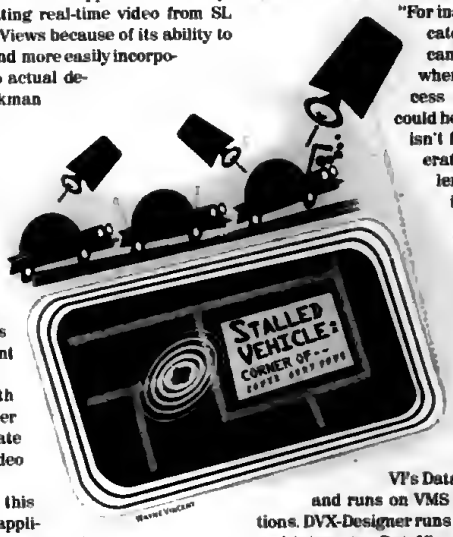
VI last month announced the incorporation of full-color, high-resolution video capabilities to monitor and control real-time processes with the company's DataViews graphical development tools.

VI worked closely with Parallax, a manufacturer of video cards, to integrate DataViews with live video feeds.

The ability to access this sort of data in real-time applications is new, according to several industry analysts.

"We haven't seen comparable products merging real-time video with in the user interface," said Stephen Autitore, president of the X Business Group, Inc., a market research firm in Fremont, Calif.

"This lets developers create applications where the user can interact with the video data," Autitore said. "For instance, if traffic censors indicate that there's a problem, they can click on a traffic map to see where the problem is. Or in a process manufacturing plant, there could be problems with a valve which isn't functioning properly. The operator could then view the problem in real time to see what's going on."



Better performance

According to Wayne Kernochan, an analyst at the Aberdeen Group, a Boston consulting firm, VI's compression capabilities are also more sophisticated and offer better performance than those of competitors.

VI's DataViews 9.5 is priced at $17,700 and runs on VMS and all major Unix workstations. DVX-Designer runs on Sun, HP and IBM platforms and integrates DataViews and X Designer, VI's Motif graphical user interface builder. DVX-Designer lets developers create Motif interfaces in conjunction with animated screens built with DataViews. The Xvideo card from Parallax is priced at $7,500.

Magic 5.6 offers improved GUI

By Melinda-Carol Ballou

Magic Software Enterprises, Inc., an Irvine, Calif., developer of the Magic rapid application development system, last week announced Version 5.6 of Magic with improved Windows graphical user interface (GUI) development.

Version 5.6 offers GUI objects and widgets and a new method of importing SQL database file definitions, among other features.

New Windows objects include push buttons, radio buttons, check boxes and sliders, which are supported in Magic's dictionary and tables. Magic supports these new features while running DOS, Unix, VMS and Windows. New parameters in Magic's dialog boxes will offer developers the ability to tightly define widget functionality.

Multiple loading function

A new Load File Definition is intended to make it easier to develop applications in conjunction with SQL-based relational database management systems such as Oracle Corp.'s Oracle, Sybase, Inc.'s Sybase and Digital Equipment Corp.'s Rdb.

This function allows Magic programmers to load single- and multiple-file definitions from the DBMS data dictionary directly into Magic's File Dictionary so that developers do not have to manually and tediously reenter file definitions, company officials said.

Pricing for Magic 5.6 starts at $2,000 for multiuser development licenses.

[redacted]

ImageSoft, Inc. has introduced ClassWorks, a C++ class library.

According to the Port Washington, N.Y., company, ClassWorks features multithreading, suspending threads, blocking on threads, entering and exiting critical sections, semphores and Interprocess Communication.

The product provides nine main categories of classes: Windows, Resources, Strings, Graphics, Containers, System Services, Interprocess Communication, File and Directory services and Miscellaneous.

The vendor version of ClassWorks is priced at $499; the OS/2 version is available for $699.

▶ *ImageSoft*
(516) 767-2233

Lucid, Inc. has introduced Lucid C and Lucid C++ compilers for the Solaris 2.x environment.

According to the Menlo Park, Calif., company, the products provide direct compilation of C++ code as well as link and runtime compatibility with Sun Microsystems, Inc.'s development tools. The tools support automatic precompiled header files for rapid compile turnaround.

The Lucid C++ compiler provides five modes of operation, and both compilers integrate with Lucid's Energize Programming System.

Lucid C++ Version 3.1 costs $1,095; the Lucid C version is available for $495.

▶ *Lucid*
(415) 329-8400

Softbridge, Inc. has announced Version 3.0 of the Softbridge Basic Language (SBL).

According to the Cambridge, Mass., company, SBL is an implementation of Basic created for seamless integration into application software.

The product's syntax is compatible with Microsoft Corp.'s Visual Basic and can be expanded to include application-specific commands and functions.

SBL 3.0 also features Digital Equipment Corp.'s Object Linking and Embedding 2.0 automation compatibility.

SBL is available for OS/2 and Microsoft's Windows and Windows NT.

Pricing for unlimited distribution licensing begins at $175,000.

▶ *Softbridge*
(617) 576-2257

Apex Software Corp. has announced support for Microsoft Corp.'s Visual Basic Version 3.0 programming system with TrueGrid Pro, its data-aware grid custom control.

According to the Pittsburgh company, TrueGrid Pro allows programmers with Visual Basic to create in-cell editable and fully configurable database browse tables without writing a line of code.

TrueGrid Pro supports all database formats that Visual Basic recognizes and offers users visual effects and editing capabilities.

TrueGrid Pro costs $129.

▶ *Apex Software*
(412) 681-4343

Product shorts

Media Architects, Inc. has introduced MediaKnife/VBX 1.0, a set of extensions designed for Microsoft Corp.'s Visual Basic that allows users to create kiosk multimedia games, titles and other applications. Cost: $299. Media Architects, Portland, Ore. (503) 297-5010.... **Absoft Corp.** has introduced MacFortran II Version 3.3, a Fortran compiler for the Macintosh. Features include improved 68040 CPU support; a full-screen source-level symbolic debugger; SoftwareFPU, a software emulator that allows use of the compiler on machines without a math coprocessor; and special routines that provide compatibility with XVT Software, Inc.'s cross-platform, graphical user interface development system. Cost: $595. Absoft, Rochester Hills, Mich. (313) 853-0050.

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Dr. Andrew Grove
President and CEO
Intel Corporation
"Free MIPS" Meet "Free Bands"
Wednesday, Jan. 26, 9:30 a.m.

Kim Myhre
Senior Vice President
International Data Corp.
Managing Internetwork Complexity
Wednesday, Jan. 26, 12:00 p.m.

Dr. Robert M. Metcalfe
Vice President Technology, International Data Group
Publisher/CEO, InfoWorld Publishing Co. Inventor of Ethernet
How LANs, WANs, Remote & Mobile Networking Won't Converge
Thursday, Jan. 27, 9:30 a.m.

Richard E. Wiley (Moderator)
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  Thursday, January 27
  10:30 a.m. - 12:00 p.m.

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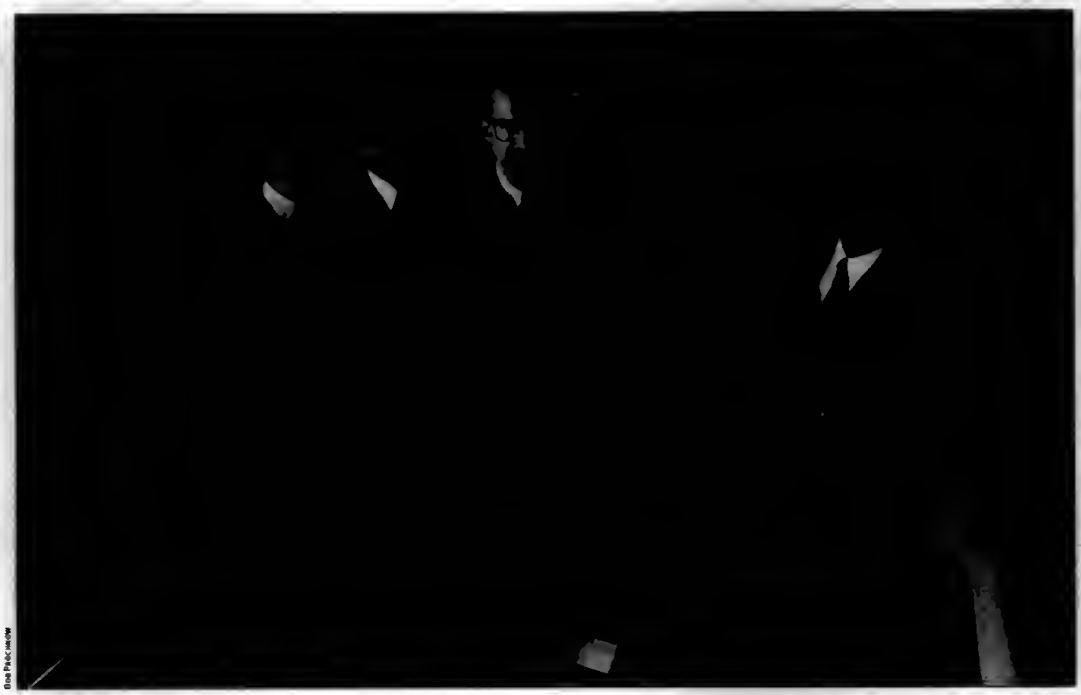
formation Delivery

RE-ENGINEERING TEAM OF THE YEAR

Glass act

Corning Asahi's television glass business might have gone down the tubes if it wasn't for a well-chosen re-engineering project

BY JOSEPH MAGLITTA



Members of Corning Asahi's award-winning re-engineering team: *(from left to right) Ruth Riesbeck, Harvey Shrednick, Ken Freeman, Maggie Coffey and Scott Patterson*

In 1989, a delivery truck roared away from the Corning Asahi Video (CAV) Products Co. manufacturing plant in State College, Pa. But the customer, a major international consumer electronics company, got a rude shock when the doors opened to unload.

The truck was empty.

Today, officials at CAV, part of one of Corning, Inc.'s oldest and largest business units, are more confident about outgoing shipments of color television glass panels and funnels. Credit goes to an ambitious re-engineering project that transformed a Byzantine, semimanual order-fulfillment process split between two states into the backbone of a modernized supply system.

"The system before required a whole lot of attention [from our] people at a higher level," says Don Bahicz, purchasing agent at Philips Display Components Co., which accounts for more than 50% of CAV's business. "The redesign has freed me, the account managers and others to work on things that have more value. It's worked fairly well."

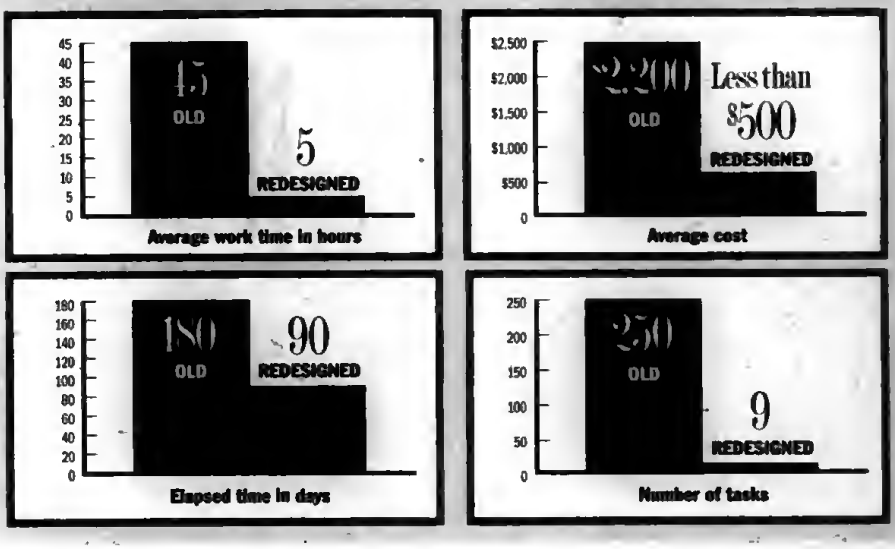
Corning says the re-engineering effort, which took approximately 15 months and cost $570,000, has already paid big dividends. The improved process has cut annual personnel costs by $400,000 and eliminated more than $1.6 million a year in errors and cost overruns, according to company officials. Fulfillment times have been halved, and per-order costs have been slashed by 75%.

But beyond playing a major role in helping turn around a troubled, 47-year-old business unit, the project served as an important pilot for a major corporatewide re-engineering initiative now under way at the $3.7 billion maker of Corning glassware, Stueben Crystal, and a host of industrial products and services.

For those reasons, CAV beat dozens of other projects to win *Computerworld*'s second an-

Order overhaul pays off

Corning Asahi's re-engineering order-fulfillment process is simpler, faster and cheaper than before, as the figures below demonstrate for an average single order.



nual Re-engineering Team of the Year award. The recognition honors outstanding process redesign initiatives completed during the previous 12 months.

Our editors especially liked the fact that the do-it-yourself project used off-the-shelf software and a full methodological tool box (see box page 84) to gain some impressive — and much needed — results.

Customer disservice

"Our customers at times feel like victims," explains L. Margaret "Maggie" Coffey, the CAV customer service manager who became leader of the re-engineering project.

One reason for this feeling is that CAV is one of only two U.S. suppliers of television glass, explains Dave Lachenbruch, editorial director at *Television Digest/Consumer Electronics*, a weekly newsletter based in Washington. Another reason is a serious industry shortage of 19-, 25-, 26- and 27-in. tubes.

Another big problem was the handling of customer orders, which was, as one staffer said, "a haphazard process out of control" (see chart page 84).

Orders were taken by telephone and entered on a 20-year-old system at corporate headquarters. Paper reports were then spit out for the State College plant and were faxed and confirmed by telephone. Other antiquated VAX systems handled accounts payable and billing. Inventory was done manually.

All told, some 20 or 25 people were involved in the order logistics process. Hand-offs and "over-the-wall" thinking were rampant, and information was scarce, Coffey says.

As a result, basic queries about inventory or order status often couldn't be answered, recalls Scott Patterson, an information systems business manager at CAV. "The typical response might be ... 'Uh, I'll get back to you.'" When representatives did call back, "many times the customer would have better information than the customer service rep. It was a very embarrassing situation," Patterson says.

It didn't help that CAV's six customer service representatives were split between headquarters and the division's main factory hundreds of miles away in north central Pennsylvania.

"Communications were pretty poor," says Ruth Riesbeck, then CAV's quality coordinator. "If [customers] called Corning [in] New York, they might get one answer. If they called State College, they would almost always get another."

Another real killer, Coffey adds, was how work was organized. "One person could be responsible for $160 million in customer business and they were the only person who knew it," she explains. "If Suzie Q got sick and didn't come back in, no one could get into her files or understood how to process the order. It was a real nightmare."

Mandate: Get profitable

Little wonder that by early 1991 CAV was struggling. Between 1987 and 1991, the firm lost in the millions.

To make matters worse, in October 1991, Corning, Asahi Glass America, Inc. and CAV were hit with a $1.8 million federal fine for emitting illegal levels of arsenic into the air at two manufacturing facilities several years earlier.

Corporate management delivered an ultimatum: Restore profitability — and fast.

Kenneth W. Freeman, a 20-year Corning veteran appointed chief executive officer of CAV in November 1990, set out to fix the ailing division. It didn't take long, Freeman says, to realize his work was cut out for him.

"On my fifth day on the job," Freeman recalls, "I noticed that the order-fulfillment system, or a large part of it, was the same system that was used when I was an assistant plant controller at CAV back in 1976. I said, wait a second ..."

Conversations with customers confirmed that placing orders was difficult and burdensome. Processing one order took 75 hours, cost $3,741 and required 209 days to complete. Freeman decided "drastic surgery was required."

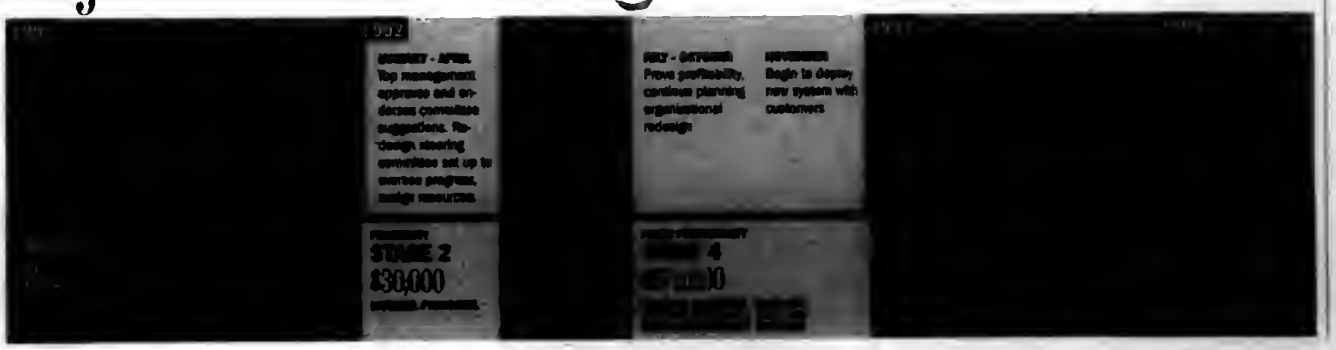
So in June and July 1991, the division began laying the foundation for later re-engineering efforts by staging "The CAV Challenge." All 1,200 of the unit's employees attended a three-day session to talk about the business and hear customer complaints.

Soon after, Coffey posed what turned out to be a hugely important question: What about re-engineering? At first, management was skeptical, says Coffey, a personable Harvard MBA who did stints in the early 1970s as a salesperson and trainer at Honeywell, Inc., Digital Equipment Corp. and Corning before rejoining the firm in 1990.

"We didn't have four or six months to plan. Our CEO said, 'This is really interesting. But we don't have the time and we don't have the personnel.'"

Glass act, *page 84*

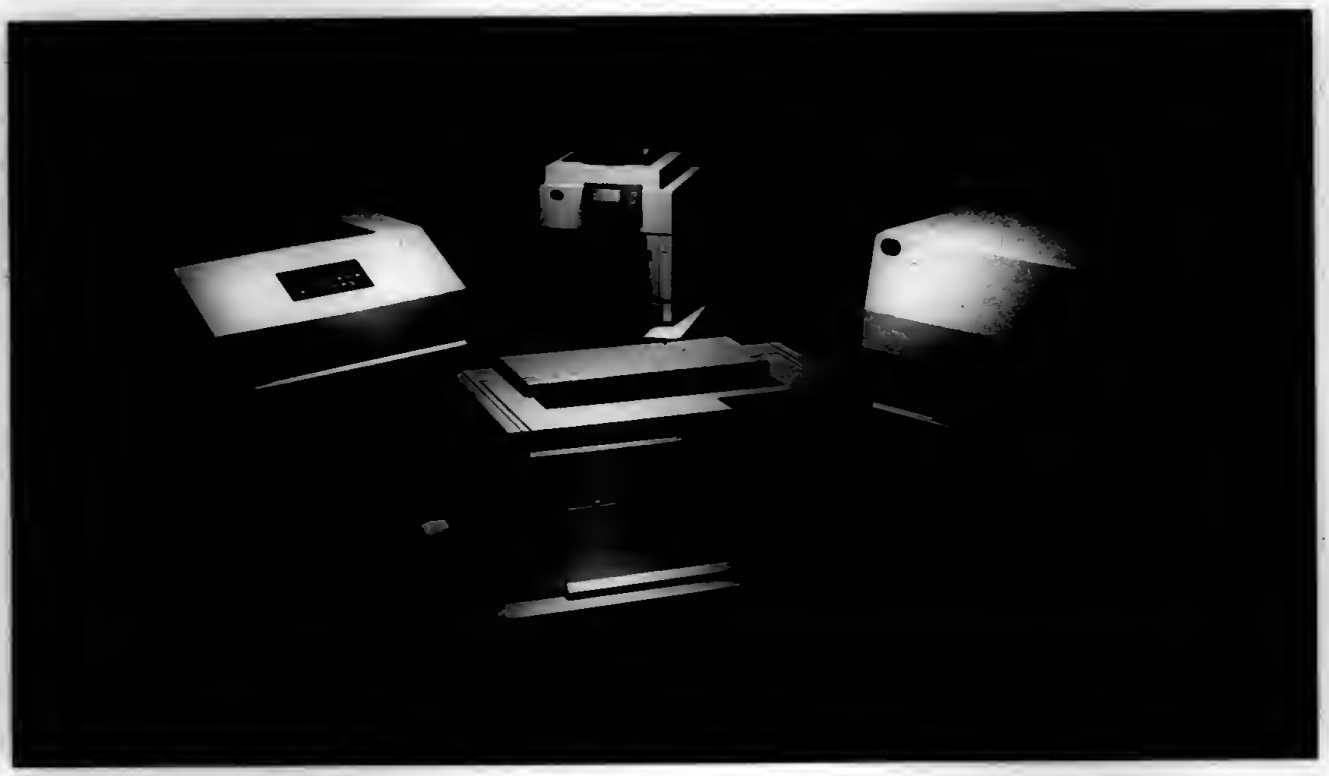
Project timeline



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Glass act

CONTINUED FROM PAGE 81

Freeman called in Harvard Business School organization redesign specialist Michael Beer, a former Corning employee, to deliver a day of what Coffey calls a "sort of shock therapy." Soon after, CAV management gave the green light for a high-impact, low-risk re-engineering project.

After examining several troubled functions, including forecasting, planning, complaint resolution and new product development, the decision was made to tackle order fulfillment. Ironically, Freeman says the function was originally chosen because it was considered an internal process. "If we screwed up, the customer would not be affected," he jokes.

In midyear, Coffey traveled to Cambridge, Mass., to consult with re-engineering guru Michael Hammer and CSC/Index. Coffey, already a re-engineering enthusiast, liked what she heard but found the price too steep.

"They were talking a quarter of a million dollars to do the job," she says. "For a company with a negative return on equity, that was not real interesting information."

Still, Coffey left encouraged. "I got sort of a feel from the boys in Boston that we were on the right track," she recalls. "Hammer said he had never seen a re-engineering project that could be done in 15 or 18 days. I showed him the [proposed] process, and he wished us luck."



Down to business

In the fall of 1991, a handpicked, 12-member cross-functional team began meeting off-site to examine and fix CAV's order-fulfillment process. Among the eight full-time participants were three IS people: Patterson, Information Services Director Walt Surdak and Dennis Lockhart, an IS business manager who had begun tackling the runaway order fulfillment a couple of years earlier.

In-person and telephone dialog with customers quickly revealed a long list of horror stories: Mixed-up orders. Wrong items shipped. Eight trucks dispatched instead of two. A thousand panels lost in the warehouse. A missed shipment that nearly shut down a customer factory. The list went on and on.

An internal study found such errors cost more than $2 million a year in overtime, extra freight charges and phone calls, faxes and accidental discounts. So for the next three months, the team met several days a week with customers and CAV customer service representatives in what Riesbeck called "tag-team redesign."

"We'd have one of the customer service people in for the morning, then they'd slap hands and go back to the office. Another person would rotate in at 2 [p.m.]. We might leave at 4 [p.m.] and run back to the office to answer our messages and phone calls. The next day we'd start over again."

Using Corning's Impact technique (see box at left) and business process theory, the team methodically mapped out a new approach.

In addition to long hours, team members also had to strike the tricky balance between keeping the redesign moving while satisfying management and customers. "We didn't want our customer service to get even worse than it was," Riesbeck explains. "Management was screaming. Customers were screaming. We were really under the gun."

There were unexpected delays. Three days, for example, had been allocated to learn about the order process. It took three weeks.

"You really want people to be part of the process," Coffey says. "Yet some of them were such detail people they were killing the team. They would sit there and go 'Task Number 2 is I move the piece of paper to the right hand side of my desk ...' By the end, everybody's eyes were spinning."

By late 1991, a plan emerged. Top management enthusiastically endorsed the team's recommendations and made a key decision: The planning team would also handle implementation to avoid what Freeman terms "hand-off mentality."

So early in 1992 a redesign steering committee was established to oversee project progress and assign resources. Coffey, "owner" of the process to be revamped, and Patterson, the unit's IS liaison, were natural choices to lead.

"Scott and I were bound at the hip," Coffey jokes. "Wherever he went I went."

In early 1992, Corning's Innovation framework was applied. One of the first orders of business was to pick the right technology.

Twice bitten, twice shy

"The strategy from Day 1 was to not make technology a risk factor," Patterson explains. "There were enough things at risk already."

The system chosen had to be implemented cheaply and quickly by year's end. The big question: Buy commercial software or develop an application in-house?

"In the past, we always said 'We're different, we need to grow our own,'" says Harvey R. Shrednick, Corning's senior vice president of information services. But a July deadline for testing plus a hefty million-dollar-plus estimated price tag quickly eliminated that option.

A team led by Surdak and coached by Shrednick examined several computing options. Because of its importance, choosing the best technology became an agenda item at CAV staff meetings for several months.

A PC-based, client/server approach was rejected as being too unstable and lacking functionality. So, too, was a mainframe-based order-processing system that was being installed in 12 other Corning business units. Shrednick and others felt the system lacked certain key functions that CAV needed.

Eventually, the choice was narrowed to a commercial software package from Andersen Consulting called DCS Logistics. At first, Shrednick balked. "I refused to support [the package] because it had not worked in a VAX platform. DCS had 200 to 300 mainframe sites, but only one in the world on the VAX. I had been burnt before by two other software vendors who had pioneered VAX platform packages on us."

The danger was real: Failure would set work back three to six months until a new solution was found, effectively killing the project. However, a telephone interview with the vice president of distribution at the VAX reference site persuaded Shrednick the $119,000 package was stable enough to try on Corning's VAX 4000/500. Another $400,000 was set aside for personnel and consulting expenses.

So in April, a five-person team led by consultants Michael Sullivan, Albrecht Powell and Tom Hanley from Andersen's Pittsburgh office set up a "Conference Room Pilot." This seven-week on-site prototype would run actual customer data to help Corning determine if DCS would work in their environment.

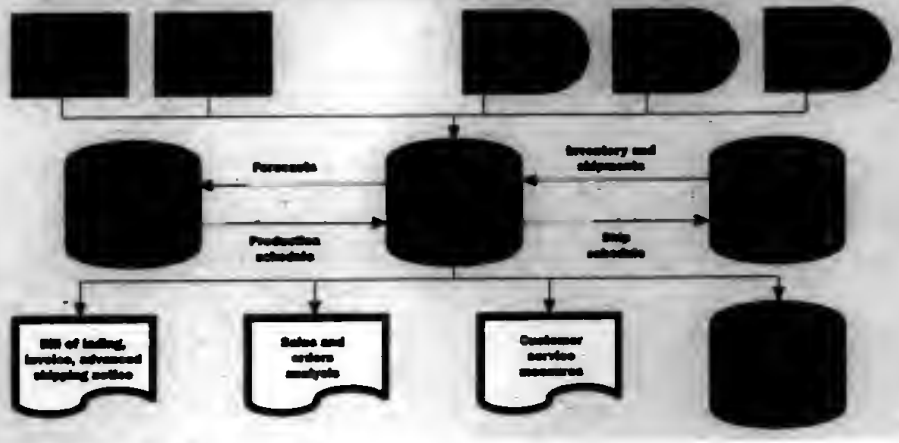
Fortunately, the trial worked. So Shrednick and Surdak brought their recommendation to the steering committee, which approved it. Implemention began in August 1992, a scant four months before deadline.

Nearly everyone involved in the last phase re-

Glass act, *page 88*

How the new flow works

To speed order fulfillment, Corning replaced multiple disjointed systems and pieces of paper with an integrated system and centralized database. In the new setup, customer information is entered only once, eliminating many data-entry errors. Besides greater flexibility, the re-engineered approach also provides real-time access to information.



it's all time high, wiping out more tha billion in shareholder value

'Steep Learning Curve'

Those pressures leave little time for a new boss to master IBM's business. Fully 51% of IBM customers surveyed by **Computerworld** magazine say IBM needs to hire a CEO with a technology background. With Mr Gerstner lacking such a pedigree, "he's going to be on a very, very steep learning curve," says David Hanna, a former IBM executive who is now president of Hanna Group, a computer-consulting

THE WALL STREET JOURNAL
March 25th, 1993

Computers & Automation

"Information systems managers are grasping onto this as a Holy Grail," said Paul Gillin, executive editor of **Computerworld**, which is just one of many industry trade publications that spotlight reengineering on a regular basis. "It is an important leap for corporations."

The hype should reach crescendo in May, when a new book by management consultants Michael Hammer and James Champy will be publis[hed] "Reengineering the [C]orporation: A Manifesto for Business Revolution."

Investor's Business Daily
March 25th, 1993

eir question: Where are the productivity savings?

The New York Times
April 25th, 1993

CORPORATE executives appear to be more knowledgeable about computer technolgy than ever before, but they have also become more demanding and less forgiving, a new survey has found. While they believe information technologies are the key to competitive advantage, they also say that they have not been getting their money's worth.

The survey, conducted by the computer industry newspaper, **Computerworld** and Andersen Consulting, also found that 81 percent of top executives are personally using computers in their daily jobs, nearly double the percentage reported when the survey was first taken four years ago.

More than 200 chief executives, chief operating officers, and chief financial officers, representing a broad range of businesses, participated in the study, the results of which were published in **Computerworld** last week. Annual company sales ranged from $250 million to $20 billion.

...L. CUSTOMERS HAVE THEIR SAY TOO

■ IBM directors should forget about hiring another salesguy to replace John Akers as CEO. And whoever he is, Aker's successor should fire a whole lot more people. So says a *Computerworld* survey of executives at 100 companies that spend at least half their computer budgets on IBM products. The participants, who work at the likes of **Kmart** and **Parker Hannifin**, a maker of pneumatic and hydraulic components, also said IBM's reorganization into smaller business units should go further.

Computerworld, in addition, interviewed various computer industry luminaries, including Steve Jobs. The Next CEO marveled that none of IBM's machines from mainframes to PC's uses the same software. Says Jobs: "IBM's troubles stem from the fact that they approach everything from a hardware strategy, and the Nineties is a software decade."

Not everybody agreed that breaking up is the way for IBM to go. Said Larry Ellison, CEO and co-founder of **Oracle**, a software company: "This is the

...and an... ...ber, Richard is a retired I.B.M. vice president.

A survey of some 100 of I.B.M.'s largest customers by **Computerworld** magazine found that 51 percent preferred someone with a technical background to be the computer giant's new chief executive, while 36 percent said technical expertise was not essential and 13 percent had no opinion.

But some industry experts say technology knowhow is [a] ...ty a t...

93 **FORTUNE** 11

FORTUNE
April 5th, 1993

...corporate c... ...r systems...

EEK, THERE'S A MOUSE in the corner office. The percentage of executives who regularly use computers nearly doubled in four years, to 51% from 42% in 1989, says a study by **Computerworld** magazine and Andersen Consulting. Fewer than half think they are getting their money's worth from corporate computer systems.

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The New York Times
March 25th, 1993

THE WALL STREET JOURNAL
April 20th, 1993

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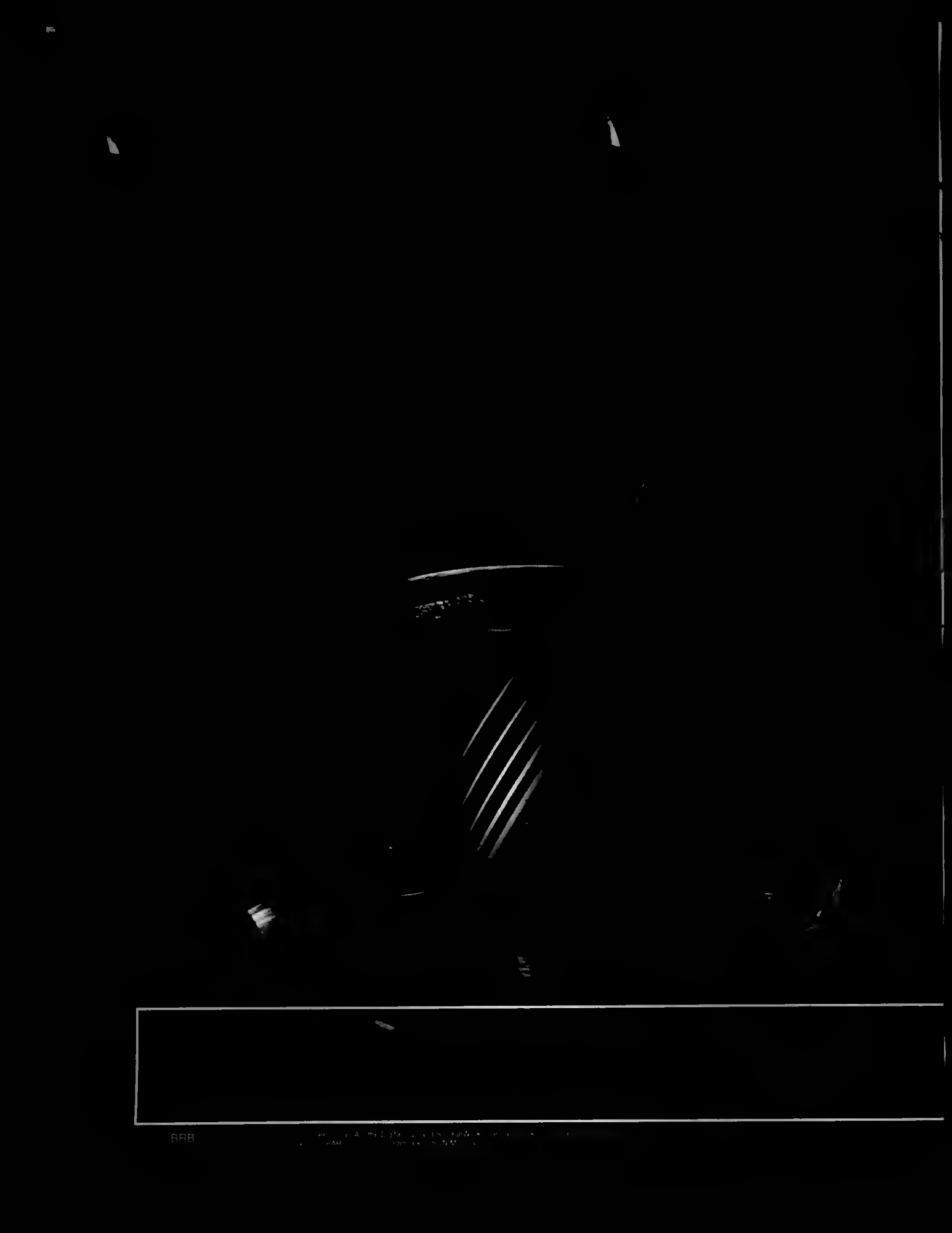
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digital

Glass act

CONTINUED FROM PAGE 84

members system implementation, integration and organizational redesign as an intense, stressful (and often political) blur of activity.

"People can sit down and look on a white board and say, 'Yeah, that all makes sense, and change is great as long as it's not me.' But when you actually start changing what they do on a day-to-day basis, that's when it gets tough," Patterson adds.

For example, Coffey says sales representatives felt threatened by expanded customer service roles but relaxed after realizing they'd get better support.

Reps themselves struggled to balance daily work loads with testing and learning a complex new computer system. "Stressful would be a mild term to use," says Charlotte Baldwin, customer service coordinator/team leader. Patterson is more blunt: "It was hell."

Indeed, many team members worked 10- to 12-hour days, six or seven days a week.

Closed doors

Throughout the project, the team kept a constant eye on communication and motivation.

"Some re-engineering teams I read about in magazines really get into this, with all sorts of T-shirts and hats and parties," Coffey says. "I kind of felt bad we didn't do that."

But they did send out weekly voice mail and E-mail updates to everyone in CAV as well as "period reports" to 75 people. Redesign meetings regularly drew 50 to 60 people.

"We felt like bragging grandparents," Coffey jokes. "Every time we took a little baby step we'd send something out. I think they got sick of hearing from us."

Although team members say they didn't encounter any overt sabotage, passive resistance cropped up. Some department heads, for instance, were always unavailable for meetings.

The solution? "Sit down and help them understand why we are dealing with this," Patterson says. "There [were] a lot of closed doors."

Even the best diplomacy and communication couldn't prevent the inevitable. Customer service operations eventually were consolidated in State College and four jobs — including Coffey's — were eliminated.

"It's almost like the Mafia," Coffey muses. "You say, 'This isn't personal, this is business.'"

Work continues

In January 1993, the new order-fulfillment system went live — on schedule and within budget. But things were far from smooth.

Various bugs, glitches and plain mysteries had to be worked out, Baldwin recalls. During final testing on New Year's Day 1993, Andersen scrambled specialists from its Chicago headquarters to fix a glitch so that the system could be running by Monday.

Adjustment and expansion continues today. Work will begin this month to enhance reporting capabilities and create a more sophisticated, friendlier interface. Corning continues to expand the system to customers and other departments.

Even so, gains so far are impressive: Corning says the time needed to fill an order has been cut from 180 to 90 days. Average processing costs have been slashed from $2,200 to less than $500. Actual time spent fulfilling orders has shrunk from 45 hours to around five, and the number of required tasks has fallen from 250 to as few as nine.

And because the order system is now linked to the warehouse, inventory and distribution systems, customers can get fast, accurate answers, Shrednick says. "Eventually, customers will be able to enter orders, review status, release products and bill upon receipt."

And dramatic as improvements have been, the new system is not a panacea.

True, Corning officials seem pleasantly surprised that CAV's business is improving, says Martin Ressinger, an analyst who follows Corning for Duff & Phelps in Chicago. But the future is less clear.

In June, Corning sold another 3% of CAV to Asahi, reducing its stake to 51%. Company officials say the sell-off was part of the original agreement and that no plans exist to further decrease the company's holdings.

But Lachenbruch, of *Television Digest/Consumer Electronics*, says he wouldn't be surprised if Corning eventually sells its television glass business.

"The emphasis in the industry has switched to larger tubes," he says. "Neither [Corning nor OI/NEG] needs to put up the enormous capital expense of retooling for a new family of tubes."

Last fall, Clifton Smith became CAV's new CEO, replacing Freeman, who was named corporate executive vice president of human resources and administration at Corning.

And the original project still has a ripple effect. The redesigned order fulfillment sparked a divisional reorganization. While no layoffs have been announced, reductions in sales and other functions are likely, Coffey says.

Still, there's no doubt the order-entry project helped catalyze re-engineering at Corning. At CAV, for example, mold shop operation and purchasing also tackled re-engineering projects, as did three other business units. Later this month Corning says it will announce a massive corporatewide re-engineering initiative.

The original effort also changed several jobs. Reisbeck is now quality and purchasing manager at Corning Engineering. Coffey heads a new re-engineering consultancy in Corning's corporate systems engineering group. And in his new post, Freeman serves as Corning's unofficial re-engineering champion.

"In the old days we had to work a lot harder," Baldwin says, "and it wasn't as efficient an approach." The 28-year Corning veteran says she's proud of the new team atmosphere, and accuracy rates in the high 90th percentile.

Concludes Riesbeck: "We didn't exactly do it in the classic way. But we got the job done." ■

Watch-outs and words to the wise

1 Pick the best people

"If I had a technical guy who didn't stay close to the operation, who was always fighting for control, who didn't see his right place as being a partner and a supporter, it wouldn't have worked. Same thing if Andersen Consulting had sent some guy with five thumbs. Having the right players with the right skill sets means the difference between success and also-ran."

— Harvey R. Shrednick, Corning senior vice president

2 Keep roles defined, yet fluid

"There was not any turf that was hands-off. There was such overlap and no set way that we did it. I would talk to [customer service reps] about the systems aspects of a project as well as roles and responsibilities. Day-to-day we were working in each other's offices pretty constantly."

— Scott Patterson, CAV IS business manager

3 Look for front-line leaders

"The conventional model is that you've got to have top-down leadership in re-engineering. If you are doing one process at a time, I'm not sure you need that fanatical CEO. I think what you need is an enlightened leadership that allows you to do your work and takes down the barriers. Leadership can come from the organization that will own that process."

— Maggie Coffey, CAV customer service manager

4 Sell and tell

"A re-engineering effort is a lot like cheerleading. If you really get the spirit and you can get other people to start jumping up and down, you can move mountains. You can get by with so much more if you just communicate to vast audiences."

— Maggie Coffey

5 Don't fear conflict

"You need to bring up the issues, talk through the issues. You can't just let those differences of opinion lie out there and further grow."

— Ken Freeman, Corning executive vice president

6 Consider purchasing software

"We were able to map our processes to fit the system, as opposed to modifying the system to fit the processes."

— Harvey Shrednick

7 Expect resistance

"People would say: 'This screen wasn't exactly what we are used to. Or 'We don't call it an *item* — we call it a *product*.' Fighting through that whole thing was difficult."

— Scott Patterson

"Coming up with the design and implementing the computer systems really aren't the tough things. The tough things are looking at people and saying, 'You will need to change the way you are operating or you will not need to be here anymore.' That's when you end up stepping out on those thin branches."

— Maggie Coffey

8 Keep focused

"Once you get to organizational issues people want to take the gloves off and start fighting. You've got to go out there with the big picture of the redesign effort and what customers are asking for."

— Maggie Coffey

9 Get ready for blood, sweat, tears — and long days

"If someone had told me it would take as long as it did, I might have gotten colder feet."

— Ken Freeman

"It's a very draining experience, both emotionally and mentally. You may not have to travel like a consultant, but the demands are very similar. And it's really worth the effort. It's exciting to push yourself to the limits of your creative and mental abilities."

— Maggie Coffey

10 Hang in there

"There were a number of times when I said, 'Why don't we find another challenge to bang our heads against the wall on?' Persistence was the key."

— Scott Patterson

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Esther Dyson
EDventure Holdings, Inc. Publisher, Release 1.0

Moderator

She is Editor and publisher of the influential newsletters Release 1.0 and Rel-EAST. Release 1.0, widely respected and quoted for over 10 years, focuses on new developments in software and software design, applications, networking and the transforming of new technologies into commercial solutions. Dyson promises a frank and forthright review of the client/server uprising.



David M. Carlson
Kmart Corporation, International Headquarters

invited by COMPUTERWORLD

As Senior Vice President in Corporate IS, Carlson has been noted for creating a vision for automation and technology. The company's retail automation program saves Kmart approximately $200 million annually through UPC symbol scanning, on-line credit authority and automated layaway. Carlson's work has been recognized in awards by SIM and Computerworld.



L. John Severson
The Trane Company

invited by NCR

As VP, IT and Change Agent, he initiated and has provided leadership for a massive re-engineering effort, called Business Transformation. He is responsible for the design and construction of the client/server infrastructure which will enable and support transformed business processes. He has provided IT leadership, pioneering in such areas as end-user computing, telecommuting and outsourcing.



Roy W. Camblin
CIO for Oracle Corporation

invited by Price Waterhouse

As Senior Vice President, he is responsible for defining and implementing Oracle's internal information systems and support services. Prior to joining Oracle, Camblin worked at Wells Fargo where he managed technological and operational support for more than $20 billion of business transactions daily. In 1989, he received "Information Systems Visionary Award" for his work in client/server technology.

32 Bit Operating Systems & Apps





John Gantz
International Data Corporation

Moderator

As Senior Vice President at IDC, Gantz oversees research in desktop automation and workgroup and office computing. His coverage also includes PC hardware, software, and pricing, as well as open systems, PC channel support, and LAN-based computing. Gantz brings 20 years of research authority and candor to a closer look at how 32-bit technology will perform in the trenches.



George Oliver
The Royal Bank of Canada

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As Manager of Information Delivery Technology, Oliver has spearheaded the Royal Bank's Information Delivery Technology Group which oversees PC, LAN, Security, Self Service and Office Technology products. With this group as the technology catalyst, the Royal Bank has evolved its delivery systems from a central-site computing focus into a distributed cooperative enterprise of mainframes, LANs and PCs.



David A. Pensak
E.I DuPont Nemours, Inc.

invited by SunSoft

As Principal Consultant, Advanced Computer Technology and Corporate Advisor, he has had responsibility for planning and managing projects in computer science and technology. He has chaired or served on corporate committees on Open Systems, Data Security, Workstation Selection, Software Auditing, Technology Planning Expert Systems and Electronic Conferencing.

Imaging/Work Flow Technology





Charles Babcock
Technical Editor, Computerworld

Moderator

Babcock reports on the pivotal technologies that are shaping IS in the '90s. In addition to extensive coverage of user and vendor sites, he writes a weekly column on major technology trends and directions. Babcock has served as mid-Atlantic news correspondent, senior software editor and assistant news editor. Working out of the West Coast News Bureau, he brings an astute perspective to his assessment of imaging/work flow technology.



Ronald L. Baker
Connecticut Mutual Life Insurance

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In the past five years as Vice President, IS Planning and Operations, he has held executive management responsibility for corporate level technology services, including information architecture, corporate business applications, mainframe computing, database services, network services, PCs and client/server computing. He has played a leading role in deploying image workstations and client/server technology.



Michael R. Owens
Corporate Administrator, State of Delaware

invited by Wang

As Corporate Administrator, he is responsible for direction and supervision of all day-to-day operations of the Delaware Division of Corporations, including administration of a $4.7 million budget. Delaware is home to over 214,000 corporations, including over 50% of the Fortune 500.

When completed, the Open Image project will allow images to be remotely scanned and transferred right into the work flow, processed, and returned to the originating law firm.

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1994, February 2-4

Make-or-Break Decisions



Dale Kutnik
META Group

The Framework

Models and methods for smart decisions from META Group. Evaluate models with a working group that you choose — by technology, by application or by industry.

Dale Kutnik leads exploration of how the smartest companies make their technology choices. Kutnik presents models and methods for approaching tough and costly decisions. He reviews how decisions are made, communicated and evaluated.

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Dale Kutnik is president, research director and founder of the META Group.



Leo Collins
PacifiCare Health Systems



David T. Aldridge
BancOne Diversified Services Corp

The CTO Perspective

Two CTOs take the challenge: to tell you what their companies have concluded about these three critical technologies. They share their methods, their experiences and their own technology plans.

Leo Collins is director of Applied Technology and Information Architecture for PacifiCare Health Systems.

David T. Aldridge is vice president and chief technology officer for BancOne Diversified Services Corp., a $76 billion corporation in banking and finance.



Catherine Loup
The Research Board

The Uncharted Territory

An exclusive look into the top forecasts and analyses from The Research Board.

Catherine Loup, is partner and vice president of research at The Research Board, which convenes its 90 members to debate findings and to benchmark their experiences and best practices as CIO's of some of the country's most important businesses.

Loup will conclude the Summit with a look into the future of each of these three technologies. Will the other technology trends surpass, supersede or sideswipe client/server, 32-bit systems and imaging/work flow? Will these technologies evolve — or converge — in predictable or non-predictable ways?

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Calendar

JAN. 30-FEB. 5

14th Annual Florida Educational Technology Conference. Tampa, Fla., Jan 31-Feb. 4 — Contact: Bureau of Educational Technology/Florida Education Center, Tallahassee, Fla. (904) 488-0980

Improving Productivity in System Development. Scottsdale, Ariz., Jan. 31-Feb. 4 — Keynote: "Sociological Aspects of Technological Change." Speaker to be announced. Ten related workshops available April 11-12. Contact: Karen Hedden, Applied Computer Research, Inc., Phoenix, Ariz. (602) 995-5929

MIL-STD-1553 Two-Day Seminar. Phoenix, Feb. 1-2 — Contact: Brian Earhart, Test Systems, Pfloenix, Ariz. (602) 861-1010.

International Sales & Marketing Software and Technology Conference: Getting the Real Competitive Advantage out of Technology. Boston, Feb. 2 — Contact: Sales & Marketing Executives Of Greater Boston, Inc., Wellesley Hills, Mass. (617) 431-1088.

Executive Technology Summit '94. Tarpon Springs, Fla., Feb. 2-4 — Sponsored by The Society for Information Management and *Computerworld* Contact: ATI Travel Management, Chicago, Ill. (312) 644-6642.

FEB. 6-FEB. 12

Amtex '94. Orlando, Fla., Feb. 7-8 — Focus: specialized mobile radio and cellular. Contact: American Mobile Telecommunications Association, Washington, D.C. (202) 331-7773.

Building Enterprise Architectures. Washington, Feb 8-10 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-8305.

Corporate Governance 1994. New York, Feb. 9-10 — Contact: Investment Management Institute, New York, N.Y. (212) 370-1518.

Re-engineering: The Implementation Perspective. Boston, Feb. 9-11 — An educational seminar providing an introduction to the concepts and objectives of re-engineering, with an analysis of the business factors driving it. Instructor will be Dr. Michael Hammer, The Center for Reengineering Leadership, Cambridge, Mass. Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

FEB. 13-FEB. 19

The 1994 Annual Healthcare Information and Management Systems Society (HIMSS) Conference & Exposition. Phoenix, Feb. 13-17 — Contact: Andy Pasternack, HIMSS, Chicago, Ill. (312) 664-4467.

Sigda: Workshop on Field Programming Gate Arrays. Berkeley, Calif., Feb. 14-15 — Contact: Association for Computing Machinery, New York, N.Y. (212) 944-1318.

The Sixth Annual Software Support Conference. San Francisco, Feb. 14-16 — Contact: Jan Rosenthal, Institute for International Research, New York, N.Y. (212) 661-3500.

Networks Expo '94. Boston, Feb. 15-17 — Contact: Bruno Blenheim, Inc., Fort Lee, N.J. (201) 346-1400.

Mobile World. Dallas, Feb. 15-17 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Distribution/Computer Expo '94. West Irvine, Calif., Feb. 16-17 — Contact: C. S. Report, Uwchland, Pa. (215) 458-6410.

Government Technology Conference SouthWest '94. Austin, Texas, Feb. 16-18 — Contact: Government Technology Conference, Sacramento, Calif. (916) 363-5000

FEB. 20-FEB. 26

Share Winter 1994 Meeting. Anaheim, Calif., Feb. 20-25 — Keynote speaker: Ellen Hancock, IBM senior vice president and group executive. Theme is "Interoperability on the Workstation." Contact: Share, Inc., Chicago, Ill. (312) 822-0032.

Documation '94 Conference & Exposition. Los Angeles, Feb. 21-25 — Contact: Graphic Communications Association, Alexandria, Va. (703) 548-2867.

The Fourth Annual East Coast Oracle Developers Conference. New York, Feb. 23-26 — Contact: Adirondack Information Resources, New York, N.Y. (212) 750-3632.

Representing the Technology Client: Critical Legal and Business Issues for the Computer Lawyer. Atlanta, Feb. 24-25 — Contact: Barbara Fieser, Computer Law Association, Fairfax, Va. (703) 560-7747.

Speech-Recognition Applications: What Works, What's Next. San Francisco, Feb. 24-25 — Contact: Chuck Sheppard, Probe Research, Inc., Cedar Knolls, N.J. (202) 285-1500.

MacFair '94. New York, Feb. 26 — Contact: New York Mac Users' Group, Inc., New York, N.Y. (212) 473-1600.

FEB. 27-MARCH 5

The Groupware '94 Boston Workshop Solutions Conference & Expo. Boston, Feb. 27- March 2 — Contact: The Conference Group, Scottsdale, Ariz. (602) 661-1260.

Reseller & Integrator Symposium on Document Imaging. Santa Clara, Calif., Feb 28-March 2 — Contact: The Rheinner Group, North Scituate, Mass. (617) 545-7027.

Application Development World & Objex. San Francisco, Feb. 27-March 3 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Software World/USA: The Advanced Application Development Conference and Exposition. San Francisco, Feb. 27-March 3 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880

Engineering Document Management Systems '94. Orlando, Fla., Feb. 28-March 3 — Contact: The Kalthoff Group, Cincinnati, Ohio (513) 871-6606

Ninth Annual Computers in Libraries '94. Arlington, Va., Feb. 28-March 4 — Contact: Mecklermedia, Westport, Conn. (203) 226-6967

Pen-Based Expo and Mobile World. Boston, March 1-3 — Focus: mobile computing. Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3870.

Wireless '94. San Diego, March 2-4 — Focus: cellular conference and exposition. Contact: Cellular Telecommunications Industry Association, Washington, D.C. (202) 785-0081.

MARCH 6-12

Daratech CAD/CAM, CAE Strategy Workshops. Cambridge, Mass., March 8-9 — Contact: Daratech, Inc., Cambridge, Mass. (617) 354-2339

Mobile '94. San Jose, Calif., March 7-10 — Focus: mobile technology. Contact: Rob Johnson, Technologic Partners., New York, N.Y. (212) 696-9330.

Automatic Data Processing (ADP) Industry Conference. March 7-10, Tucson, Ariz. — Contact: ADP, San Ramon, Calif., (510) 808-1100.

Intelligence Files

Discoveries of a World Trade Center survivor

Companies trying to come up with recovery plans in the event of a disaster, and even those with one in place, can learn a lesson from the World Trade Center explosion last year.

According to Barry Weintrob, chief financial officer at the Fort Authority of New York and New Jersey, his agency had a recovery plan in place when the World Trade Center was rocked by a devastating explosion on Feb. 26, 1993. Following the blast, which killed six people and injured hundreds of others, the Port Authority found itself forced to temporarily relocate across the street.

Weintrob said the authority made several important discoveries during the transition. While that transition for the most part went smoothly, the weaknesses found in their recovery plan included slow payment to contractors (many of whom wanted instant payments for their own recovery efforts) and office automation and internal communications that took longer to restore than mainframe applications.

On the positive side, the agency found that employees not normally involved in the decision-making process suddenly found themselves thrust in to the middle of it — and with good results. Top management found they had a wealth of talent in the staff for making quick and solid judgments and much of the work load was actually done more efficiently with the hierarchy removed.

The agency now questions whether it should flatten its organization, and how it can better involve employees in the decision-making process on a regular basis.

Source: Financial Executive, November/December 1993

Don't outsource your problems

Thinking about outsourcing? If you do, outsource operations that run smoothly, not the ones that are difficult to manage. Companies that outsource their problems are likely to pay a premium to the outsourcing vendor.

It's also much more difficult to effectively manage and control an outsourcing vendor under these circumstances.

Source: Richard W. Swanborg Jr., principal, Ernst & Young; David Hall, coordinator, IT Human Resource Development, British Petroleum Exploration, speaking at Retooling '93 Conference, Atlanta, Dec. 2, 1993

RBOC/cable convergence a boon to business

The convergence of cable TV and telephone companies is more likely to benefit commercial customers first, not the general public, according to a recent report from Forrester Research, Inc. in Cambridge, Mass.

The report notes that while attention is being focused on the promises of interactive TV for consumers, regional Bell operating companies (RBOC) are getting the jump on the competition by buying cable systems to expand their commercial services. This includes bulk voice and data services for business.

Since regional Bell operators can rule out building expanded systems because of the cost and political hurdles, the RBOCs are finding it cheaper to buy existing wire than install the systems/wire themselves. This enables the operators to provide local bypass for long-distance voice and data services now, long before interactive television reaches out to consumers.

Source: Forrester Research, Inc., Cambridge, Mass.

'Time bombs' and the law

The state of Virginia is seeking information from other states about legislative efforts to deal with the use of shut-down keys, "time bombs" or similar devices used by software vendors.

Anyone who can help in the information search is urged to contact Mike Durkin, director of Information Resource Management Division, Department of Information Technology in Virginia. He can be reached at (804) 225-2423.

Source: National Association of State Information Resource Executives.

Correction

Due to a production error in the chart on organizations that can help in mastering project management (CW, Dec. 20), an incorrect contact was given for the Project Management Institute (PMI). The correct contact is Karen Condos, membership and marketing manager, (610) 734-3330, ext. 17. Fee rates are available by contacting PMI.

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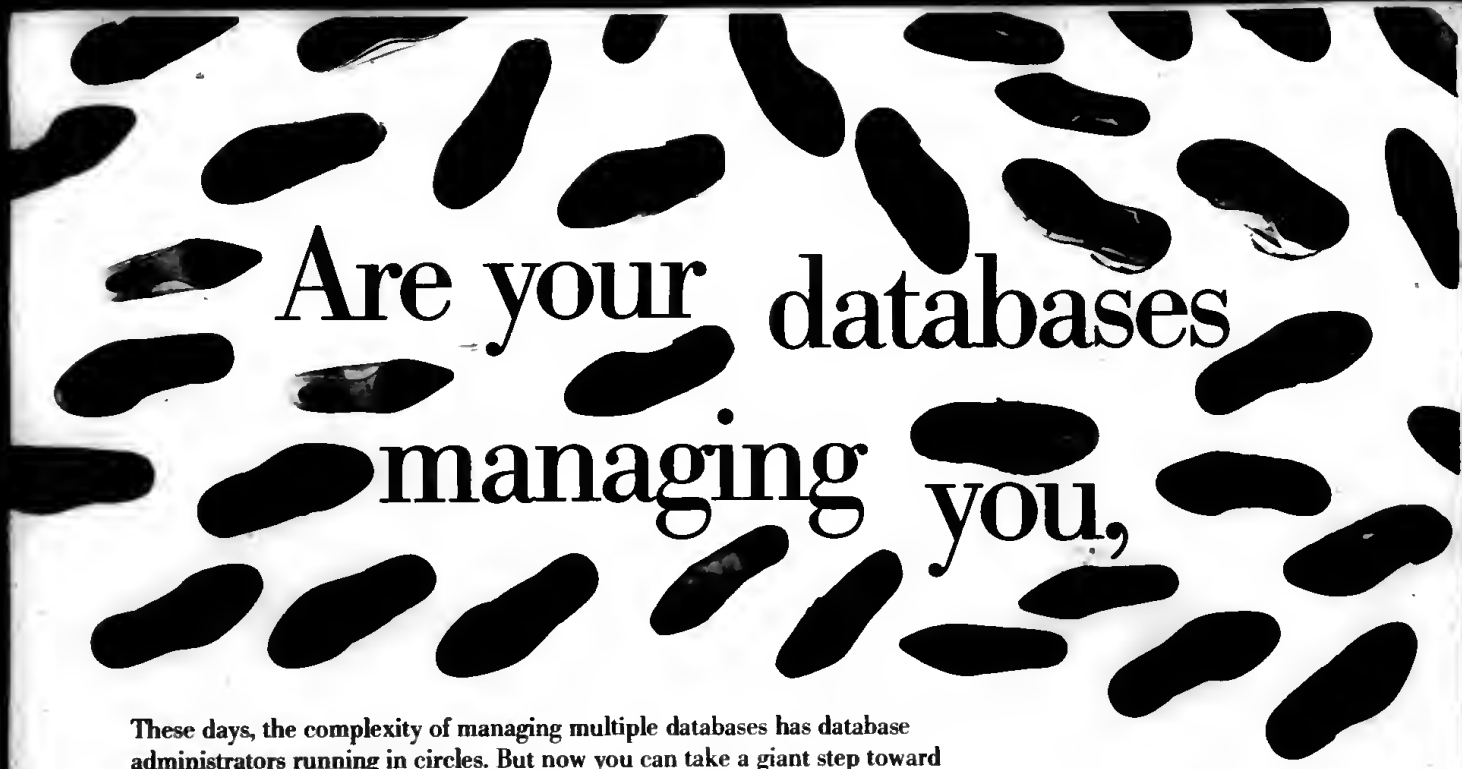
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BEYOND number crunching



Most of us know the Dow Jones average as a single numerical value. To financial professionals, however, it is really an average of 30 different stocks, each of whose value needs to be tracked.

To make things more complicated, different stocks among the 30 bear different weights.

At investment firm Robinson-Humphrey Co. in Atlanta, Microsoft Corp.'s Excel serves as a sort of magic lens through which this wholly owned subsidiary of Smith Barney Shearson, Inc. can watch minute-to-minute changes in the Dow.

By Paul Karon

"The system brings information on all 30 stocks into an Excel spreadsheet and shows you what percent each of the companies contributed to the average," says Atlanta-based consultant Alex Balentine, whose Aspen Consulting firm designed and built the application.

Like many companies, Robinson-Humphrey is helping to change the traditional definition of "spreadsheet." Using technologies such as the newest version of Microsoft's Object Linking and Embedding or the tightly integrated applications in the increasingly popular software suites, the newest spreadsheets can easily work in concert with other applications. Importing or sharing data is far easier and more effective than in the past.

At Robinson-Humphrey, a Dynamic Data Exchange link connects Excel to a software package that collects on-line stock information.

Better integration frees users to think of the work they're doing — such as a business proposal — instead of the application they're working on.

"There's a lot of interesting work being done to get to a world where we're document-centric and task-oriented rather than being tool-centric," says Chuck Stegman, a principal analyst at Dataquest, Inc., a San Jose, Calif., market research firm.

A Canadian commercial real estate firm, for example, is exploiting newly enhanced links between Lotus Development Corp.'s 1-2-3 and Notes products. Executives use data from both applications simultaneously to make leasing decisions.

Commercial leasing agreements tend to be far more complex than residential leases. Perry

Spreadsheets, *page 98*

Karon is a free-lance writer based in Los Angeles.

INSIDE:

[illegible] spreadsheets aren't [illegible]ugh. Page 98.

Borland Quattro Pro for Windows gains highest satisfaction scores. Page 104.

Excel 5.0's ease of use, new capabilities get high ratings. Page 106.

The things you can do with spreadsheets

CONTINUED FROM PAGE 97

Young, a partner at Notes consulting specialist firm Noteable, Inc. in Calgary, Alberta, helped develop an application that "allows [executives] to do the quantifiable, numerical analysis in 1-2-3 and the soft, non-numerical analysis in Notes," Young says. To the company executives, however, the analysis of a single deal can look like the single business task that it truly is.

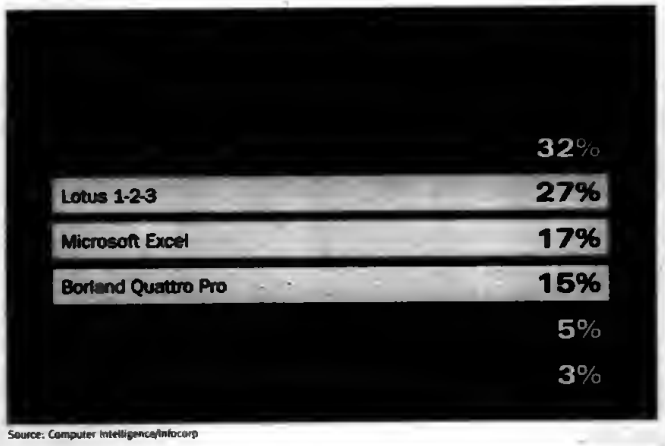
Side benefits

Close integration with other applications is not the only strength of new spreadsheets. At the South Florida Water Management District in West Palm Beach, Fla., for example, a three-dimensional feature in 1-2-3 Version 4.0 helps the agency assess the ecological value and viability of wetland environments in 15 counties.

"Development pressures here are just tremendous," says Stacy Myers, a staff environmental analyst. And it's almost impossible for builders to avoid having an impact on the fragile wetlands. "Florida is predominately a wetland — there are literally hundreds of thousands of wetlands," she says.

The Water Management District's "habitat-rating index," written in 1-2-3, enables reviewers to rate the wetlands through numerical point scales.

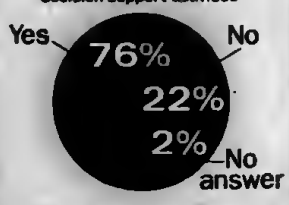
Three-dimensional worksheets enable the ecologists to keep summary sheets and original sheets separate — rather than combine all the information in one sprawling spreadsheet, which could likely have been the solution with older versions of 1-2-3. ■



Source: Computer Intelligence/Infocorp

Spreadsheets for decision support

We asked Buyers' Scorecard respondents whether they use their current spreadsheet for decision-support activities



Total respondents: 162

. . . or even more

Multidimensional spreadsheets also have their limits. "They are not designed to be part of a corporate information system," cautions James CaJacob, president of Information Concepts, a software consulting firm in Bend, Ore. "When you're trying to see what's in a large corporate information system, you need a navigation tool."

"You're limited to what you can hold in memory, and that makes most spreadsheets very slow," adds Bill Carpenter, a vice president of PC MIS at San Francisco-based BankAmerica Corp. "With 30 financial analysts all trying to look at information in a huge corporate database, I'm looking for an enterprise solution."

Accordingly, a new product category called multidimensional data access systems, or on-line analytical processing systems, has emerged. These systems combine the storage capability of a large database with the flexible interface of a multidimensional spreadsheet.

"The primary trend in this new product category is to make the spreadsheet the skin on the front of the client in a client/server architecture," says Richard Scoville, a spreadsheet consultant in Durham, N.C.

Examples include Arbor Software, Inc.'s Essbase, Information Resources, Inc.'s Express, IMRS Co.'s Hyperion and Computer Associates International, Inc.'s Visual Express.

Like Improv, these systems attempt to deliver information in a slice-and-dice, drill-down format. Unlike Improv, they combine large amounts of corporate data in predetermined permutations and deliver them from a server.

Several users at a time, using the spreadsheet front end of the system, can navigate through the precombined data and view it in multiple dimensions.

Because these systems were designed as "enterprise" solutions, they can cost tens of thousands of dollars.

Does the advent of such systems mean we will see an end to the traditional, two-dimensional spreadsheet as we know it? No way, Scoville says. "The spreadsheet is the most basic, universal and general of PC analytical tools. You can add on to it, but single users will always need to do quotes, budgets and estimates." — *Bronwyn Fryer*

POKER CHIPS, SLED DOGS, AND DUCKS ON CRUTCHES



(WE'LL USE WHATEVER IT TAKES TO DEMONSTRATE THE ADVANTAGES OF LOTUS SMARTSUITE.)

The features that count

Cut through the embarrassment of riches to the three things that really matter

By Jeffrey Henning

Only the most detail-oriented user could fully comprehend all the new improvements to the latest versions of the leading spreadsheets. There are really three that matter most: usability, workgroup enablement and application integration. It is tempting to dismiss much of this new functionality as excessive for the average user's needs — for instance, many users will consider Quattro Pro's 100 new functions overkill. In fact, though, the new Windows spreadsheets are better suited for everyone, whether power users or users of convenience. (Henning is a senior industry analyst at BIS Strategic Decisions in Norwell, Mass.)

1 USABILITY

Microsoft Corp., Lotus Development Corp. and Borland International, Inc. have all invested considerable resources to make their products easier to learn and use.

In terms of interactive help, Microsoft has emerged as the innovator, pioneering Wizards in 1992. The company was also the first to implement "proactive help," in which the application studies how the user uses the product and suggests shortcuts for the future.

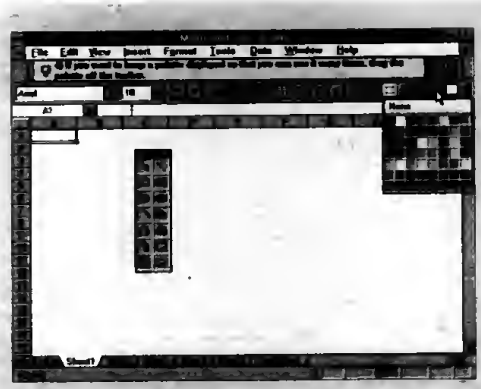
Microsoft's proactive help, called the Tip Wizard, has a lightbulb button on the tool bar; when the lightbulb is lit, the application has a suggestion. Clicking on the lightbulb provides details.

All the vendors have made evolutionary improvements to usability. Lotus has made its dialogs easier to move out of the way. It has also improved on Quattro Pro's tabbed worksheets by displaying only used tabs, rather than all the tabs available.

Borland offers the best interactive helper for graphs, automatically determining the most appropriate type of graph to use. It has also implemented balloon help: Holding the control key while clicking on an object provides a brief description of that object; users can branch from that description into the traditional Windows on-line help.

Excel does the best job of shepherding users through the myriad spreadsheet formulas, thanks to the Tip Wizard, which provides prompts for making use of Excel's 200 functions.

Quattro Pro does the poorest job, overloading users' senses by bombarding them with complex menus and crowded screens.



Pictured is a Wizard function in Excel 5.0. Wizards are a key element of Microsoft's investment in usability.

2 WORKGROUP ENABLEMENT

When it comes to workgroups, Borland's Quattro Pro excels. It is the only spreadsheet with a version specifically designed for workgroups ($495 for Quattro Pro Workgroup Edition, $95 for Standard Edition). It differs by offering a workgroup environment, specialized workgroup functions and a network distribution facility.

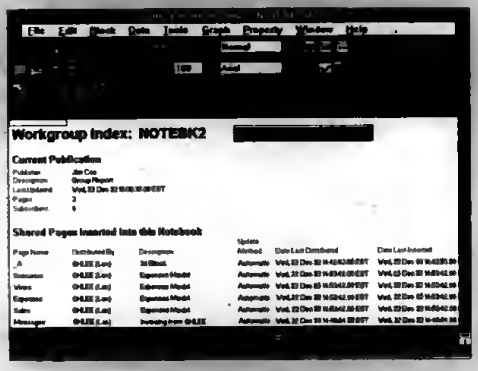
There are nonworkgroup-related additions as well, including SQL database connections, Object Linking and Embedding (OLE) client and server implementations and a spell checker.

The heart of Quattro Pro's workgroup functions is Obex, or Object Exchange. Essentially, it lets the user share worksheets (or parts of them) with other users. Obex uses a publish-and-subscribe metaphor: Changes in a published spreadsheet automatically ripple out to all subscribing spreadsheets.

Obex works with the existing messaging infrastructure, although a big advantage is that it works even without networking. Users can "sneaker-net" disks from one PC to another or intercommunicate using modems over commercial electronic-mail systems.

Thanks to Obex, Quattro Pro is superior to Lotus 1-2-3's workgroup capabilities, since the latter depends on Notes. Users with both 1-2-3 and Notes can create and modify scenarios simultaneously, with Notes notifying all users of the changes. The combination of 1-2-3 with Notes enables a user to track which users have viewed modified scenarios.

For its part, Excel lacks any significant workgroup enablement.



Pictured is Borland's Obex function, which allows users to share worksheets. It "publishes" changes on worksheets to all "subscribers."



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3

APPLICATION INTEGRATION

This is the ability of programs to work smoothly together. It has become increasingly important as suites of applications have been developed, each trying to share data among vendors' spreadsheet, word processor and presentation programs.

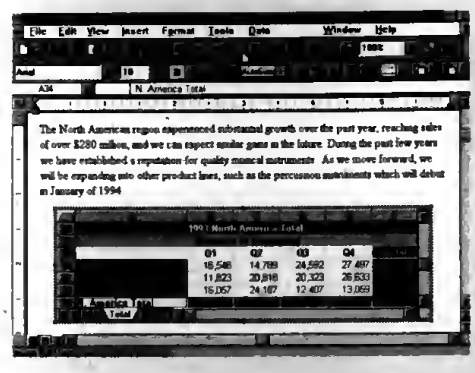
In 1993, for the first time ever, more units of Excel were shipped as part of a suite than as stand-alone packages. Ever since Microsoft pioneered this new way of selling applications, Lotus and Borland (with the help of WordPerfect Corp.) have been struggling to catch up. However, it is Lotus that has emerged as the leader in terms of offering programs with standardized interfaces using common menus, tool bars and dialog boxes.

To catch up, Microsoft has performed cosmetic surgery on Excel 5.0 to bring out the family resemblance to Word. But longtime Excel users may not recognize the new interface. To placate them, Microsoft offers an option that restores the Excel 4.0 menu structure.

Quattro Pro has a very similar interface to Paradox, but not to WordPerfect. However, Borland and WordPerfect are working closely together to make the interfaces to their suite products more consistent.

Application integration doesn't stop at appearance. Support for OLE 2.0 offers integration that's more than skin deep. OLE 2.0 enables objects from one application to be embedded in another.

Excel's implementation of OLE 2.0 is unparalleled. Word 6.0 and Excel 5.0 work so well together that when you're editing a spreadsheet in a word processing document, you may forget which application you're in. Excel also boasts Microsoft's first implementation of Visual Basic for Applications, a macro language that enables custom applications to be built.



Pictured is an Excel 5.0 spreadsheet embedded within a Word document, made possible by OLE 2.0. Users can edit the spreadsheet from within Word.

Best interactive helpers and best overall design	No interactive helpers	Good interactive help, but cluttered menus
Yes, pioneering	No	No
Mail-enabled, but offers little other functionality	Strong, but dependent on Notes	Most robust functionality as well as widest support for different environments
Poorest of the bunch, with limited amount of changes per version	Best version manager, with extensive note-taking and identification of different users	Less functional than 1-2-3's capabilities, but easier to use
Yes	No	No
Yes, but hard to use	No	No
Yes, setting a new standard	No	No
Yes	Yes	Yes
Good, but not dynamic	No, need Lotus Improv	Strong environment for data analysis
Now built-in, but clumsy to use	None	Strong, using Query by Example
Better than in the past, now offering direct manipulation	Good	Best presentation tools, but lacks drawing layer

Source: BIS Strategic Decisions, Norwell, Mass.

Features that count with users

Seems the standard fare is still most important to users. We asked Buyers' Scorecard respondents to rate the following features in terms of their importance, on a scale of 1 to 10, where 10 is "most important."



Source: Buyers' Satisfaction Scorecard



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COMPUTERWORLD BUYERS SATISFACTION SCORECARD

Quattro Pro defeats Excel by narrow margin in spreadsheet ratings

By Kevin Burden

Despite lost legal battles with Lotus Development Corp. over the use of the 1-2-3 macros, Borland International, Inc.'s Quattro Pro for Windows is still popular with users. The product received the highest user satisfaction ratings of the Top 3 Windows spreadsheets on the market.

Quattro Pro for Windows, available for more than a year, has matured right along with the platform on which it runs. To stay competitive with Microsoft Corp.'s Excel 5.0, the company skipped the version numbers between 1.0 and 5.0 along the way.

Leading the way

Quattro Pro for Windows achieved the highest overall satisfaction rating in the Buyers' Satisfaction Scorecard survey with a score of 78. The rating was just two points higher than that of last year's top scorer of the Windows spreadsheet scorecard [CW, May 24, 1993], Excel for Windows, which scored a 76. Lotus' 1-2-3 for Windows finished with 70.

The ratings on individual categories for Borland and Microsoft were closer than what the final scores reveal. Quattro Pro and Excel evenly split the 20 categories rated, each garnering top scores in 10 categories. The products also split the Top 10 categories rated most important in a Windows spreadsheet.

Quattro Pro's strengths lie in its worksheet formatting, where users are given the choice to format tables themselves or use the automatic formatting function. Despite its long and sometimes confusing menus, Quattro Pro scored the leading ease-of-use rating. The rating was boosted by the product's interactive features, such as expert and wizard capabilities. Quattro Pro scored its highest rating for the $49.95 price tag it bore until Jan. 15. It now retails for $99.95.

Users of Excel gave their spreadsheet choice the highest rating for its graphical user interface. This trend held true for ratings of most of Microsoft's applications. Excel also outscored its competition in performance.

While Lotus' 1-2-3 didn't capture the high score in any of the categories, it did post competitive scores for its formulas and worksheet formatting capabilities.

Lotus' overall rating may have been reduced because of problems users had with earlier versions of the Windows product. Unlike Microsoft and Borland, Lotus is dividing its spreadsheet offerings in two directions: In addition to 1-2-3, the company also markets Improv, a hybrid multidimensional spreadsheet with advanced data-manipulation features.

At your service...

Surprisingly, the service categories were given only mediocre importance ratings, indicating that users rely heavily on the documentation and on-line help.

Buyers' Satisfaction Scorecard is a user survey of market-leading products conducted and tabulated by First Market Research Corp. in Austin, Texas. For a complete methodology, contact Kevin Burden at (800) 343-6474, ext. 717. ■

AREAS OF EXCELLENCE

Overall performance

IMPORTANCE: HIGH	SCORE
Excel	8.0
Quattro Pro	7.6
1-2-3	7.4

Cost

IMPORTANCE: MODERATE	SCORE
Quattro Pro	8.7
Excel	7.4
1-2-3	6.8

Presentation capabilities

IMPORTANCE: LOW	SCORE
Quattro Pro	7.7
Excel	6.4
1-2-3	5.8

Individual products have individual strengths and weaknesses. Listed are the particular areas where one product outperformed the others by a measurable margin.

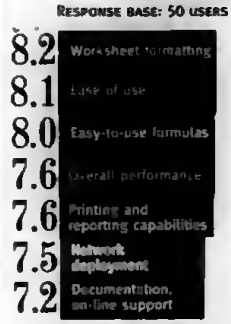
Ratings are based on a 1-to-10 scale, where 10 is best. The level of importance indicates the priority users place on the category in the purchase process.

Borland International, Inc.

Quattro Pro 5.0 for Windows

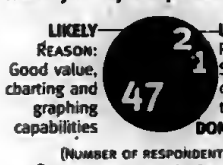
TOTAL SCORE 78

RESPONSE BASE: 50 USERS



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST

Would you buy this product again?



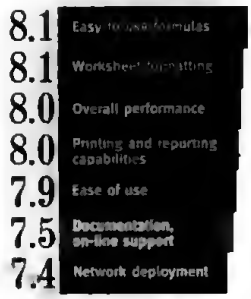
(NUMBER OF RESPONDENTS)
REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS

Microsoft Corp.

Excel 4.0 for Windows

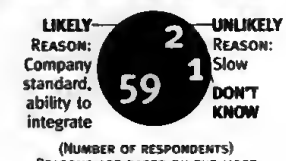
TOTAL SCORE 76

RESPONSE BASE: 62 USERS



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST

Would you buy this product again?



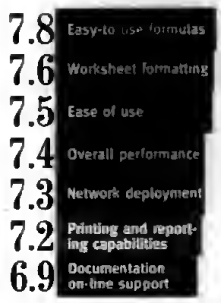
(NUMBER OF RESPONDENTS)
REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS

Lotus Development Corp.

1-2-3 for Windows

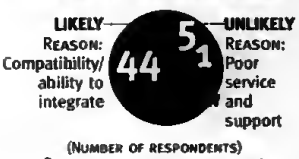
TOTAL SCORE 70

RESPONSE BASE: 50 USERS



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST

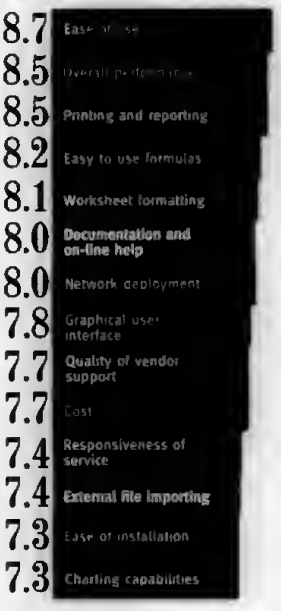
Would you buy this product again?



(NUMBER OF RESPONDENTS)
REASONS ARE BASED ON THE MOST FREQUENTLY STATED ANSWERS

Ratings in order of importance

RESPONSE BASE: 162 USERS



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST



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Microsoft Excel 5.0:
New spreadsheet features win raves

Excel 5.0

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

■ Microsoft Corp.'s Excel 5.0 delivers revamped and entirely new features that aid in ease of use and general spreadsheet potency, according to beta testers. Performance and installation are acceptable, they added, even though program files now consume as much as 30M bytes of hard disk space.

■ Excel 5.0, originally slated for release last October, is finally about to hit the streets. And, according to the evaluators assisting in this survey, it could be quite an overhaul.

According to evaluators, the new version of Excel includes Pivot Tables for data modeling, a three-dimensional spreadsheet function with notebook tabs for spreadsheet consolidation, a vastly improved macro language based on Microsoft's Visual Basic, TipWizards, which collect user actions and then suggest better ways of doing the same thing, and many other enhancements. Together, these features add up to much-improved ease of use, evaluators said.

The evaluators included systems and business staffers at a major U.S. bank, a military agency, a food products company and a consultancy. All had been beta users of Excel 5.0 for two to four months and had been Excel users for periods of one to five years. In addition, all said they were either current or past users of Lotus Development Corp.'s 1-2-3.

Reliability
Evaluators said Excel 5.0's reliability has improved with each new beta version. They said there were no reliability problems with the beta versions they were using in early January.

Performance
Performance was acceptable in Excel 5.0, the evaluators said. However, they were not expecting enormous performance gains, given the number of features added to this version.

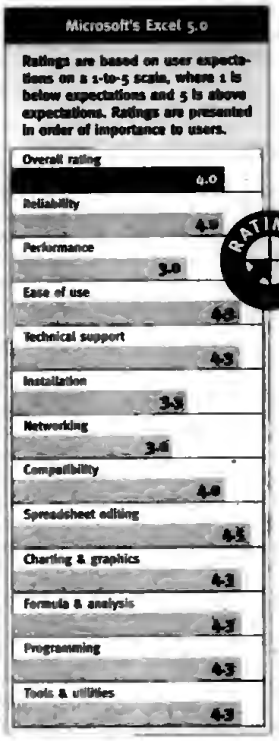
Military: "There's a tremendous increase in capabilities, so [performance] doesn't bother me."

Ease of use
Evaluators said there are many new features that enhance ease of use, citing Pivot Tables, Microsoft Query, TipWizards and FunctionWizards as examples. However, the banking user cautioned that using all of these new features will require some adjustment for current Excel users.

Banking: "You have to learn some new concepts, but it's well worth it."

Compatibility
The evaluators said compatibility was as expected. However, they anticipated improved interaction with Microsoft products such as Word and Powerpoint and said Object Linking and Embedding (OLE) 2.0 would also improve interaction with non-Microsoft applications.

Banking: "As soon as we start using Word 6.0, compatibility will be a lot better."



Spreadsheet editing
Excel 5.0 includes in-cell editing and some improvements to its formatting commands. However, the evaluators said the general integration of spreadsheet, text and chart editing was greatly improved over previous versions of Excel.

Military: "I can do quarterly reports with text, charts and tables entirely in Excel."

Consulting: "The 3-D capability allows you to edit and modify formulas through spreadsheets."

Charting and graphics
Previous versions of Excel required separate "chart sheets" for the creation of graphics. When users integrated these graphics into a spreadsheet, formatting sometimes went askew. Excel 5.0 includes what one evaluator called "in-line editing," providing easier creation and editing of charts.

Consulting: "We'll be going out to use Powerpoint a lot less."

Formula and analysis
The evaluators, who shared significant experience with 1-2-3, concurred that Excel has a broader range of spreadsheet functions than the Lotus product.

Programming
Although Excel 5.0 includes an entirely revamped macro language based on Microsoft's Visual Basic, the evaluators said they had not yet put it through any significant paces. However, they said the new language would not be difficult to use and that it would be good to have a single language for all Microsoft applications.

Military: "You can record a macro, then fine-tune it and add conditional logic."

Tools and utilities
The evaluators said they were impressed with new tools such as Pivot Tables for data modeling and TipWizards, which "teach" users to make better use of Excel. The military evaluator liked the text-import features — which he said greatly enhance mainframe data parsing — while the banking evaluator was disappointed that Excel 5.0 did not read or write Lotus 1-2-3 WK4 files.

Written by Computerworld *senior editor Garry Ray.*

Microsoft responds

Microsoft's Kathleen Schoenfelder, group product manger for Excel, responded to issues raised in this evaluation.

▶ **Learning curve:** Making the product easier to use is the key goal of Excel 5.0. A lot of effort was put into eliminating steps and making things easier, including adding intelligent features to simplify or eliminate routines. Some of the change focused on streamlining menus and synchronizing them with Word, since 70% of Excel users also use Word. In the long run, this will make things faster and much simpler.

▶ **Enhancements:** Excel 5.0 is the most significant spreadsheet upgrade we've had and was 2½ times the effort of Excel 4.0. For everyday users, the most important feature is IntelliSense. For spreadsheet users, the most groundbreaking features are Pivot Tables, which users said reduce their time spent from hours to seconds.

For people who use spreadsheets as solutions, what we've done with Visual Basic and OLE 2.0 will change the way they think about applications.



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WITH A tweak, tweak HERE AND A pay, pay THERE

IS staffs end up spending a lot more time than they bargain for tweaking and customizing client/server systems. In essence, many become their own systems integrators. The result? Higher-than-expected costs and staff burnout.



Art Gaynes

HICKORY WHITE'S PAT THOMAS: HIS COMPANY RACKED UP $6,000 IN UNEXPECTED CONSULTING FEES AS A RESULT OF KEYBOARD PROBLEMS

Pat Thomas, MIS director at Hickory White Furniture Co. in High Point, N.C., is sick and tired of jury-rigging software code. He's had to tinker so that users can have both PC and terminal access to Unix-based client/server systems from different Unix software packages.

He and his five-member information systems staff have been working on the keyboard problem since last June. By year's end, they had narrowed down the number of access schemes to four. But in the process, they also blew to bits their client/server application development schedule, which is now off by 16 months.

"What we can deduce from our painful experience is there is no [keyboard] standard within Unix that's supported across the board," Thomas says. "It sounds trivial, but you just wouldn't believe how much time we've had to spend on this."

Thomas, and other IS chiefs like him, are do-it-yourself client/server systems integrators. It's a brave new world out there for these managers, who can get tripped up on a cascading set of non-technical issues that seem to go with the territory. Budgets can easily get thrown out of whack by surprise glitches. Constant demands for additional applications-tweaking from function-hungry users work to squeeze already downsized IS

Tweaking, *page 110*

Tweaking

CONTINUED FROM PAGE 109

staffs. All in all, "integration has been a much bigger job than I or anyone else in the firm expected," reports Bill Whelpley, vice president of desktop systems at Cowen & Co. During the last year, the New York securities firm has migrated several strategic applications to a Unix-based client/server environment.

Still, most companies wouldn't have it any other way. They like the control and don't think third parties could do things any better.

"We thought about outsourcing [systems integration], but we don't think outsourcers could be as innovative as we can," says Roger Thibodeau, a vice president at Connecticut Mutual Insurance Co.'s business and technology solutions department. "We know how our business is run and how distribution channels need to be managed. This gives us an edge over an outside integrator in coming up with better solutions."

Connecticut Mutual began its move to client/server systems three years ago, deploying a FileNet Corp. image management system to more than 400 client workstations tied to IBM RS/6000 servers running Microsoft Corp. SQL Server databases.

What price integration?

Companies that become their own integrators should be prepared for the costs. IS managers report spending more than anticipated on consultants, hardware, software and various diagnostic and integration tools. Sometimes the overruns can be measured in dollars; other times, the cost is in time.

According to Jerry Grochow, chief technology officer at American Management Systems, a Fairfax, Va., consulting firm, costs often get underestimated because managers draw up budgets based on their knowledge of fairly simple client/server systems, such as inquiry systems.

"As they move to mission-critical applications requiring real-time updates between mainframes and servers, a lot of their plans get blown," Grochow says.

Thomas says he racked up $8,000 in unexpected consulting fees as a result of his company's keyboard problems.

Thomas notes that his staff has had to put a lot of unplanned time into supporting a client/server environment in which users access data on a shared server and also do DOS executes.

"We don't have the option of buying more software or people to kill problems, so what occurs is a backslide in application development," he says.

At Consolidated Edison Co. of New York, Inc., which is migrating a 20-year-old IBM mainframe-based customer service system to a client/server model, senior project manager Ed Glister says he spent more than expected on hardware and wide-area transmission facilities. He needs to ensure that the client/server system will perform as reliably as the old mainframe system.

The new system, known as CS 2, gives some 1,400 users access to a DB2 database scattered across 20 Compaq Corp. Excel servers in Con Ed offices throughout the New York metropolitan area. Originally, the company planned to use a mix of 56K bit/sec. and T1 circuits to tie the servers over a wide-area network.

As it turned out, all circuits had to be T1 lines to guarantee system performance. Opting for the T1s costs the company about $200,000 per year.

Other unforeseen expenses included buying additional network servers and software that speed up the DB2 database, Glister says. He bought 10 units at $20,000 each.

Integration can be costly

At Canada's Toronto Stock Exchange, Wayne Fowler, director of technology and network services, says his budget is off by as much as 20% because of the costs associated with making the company's



Art Gamma

"We don't have the option of buying more software or people to kill problems, so what occurs is a backslide in application development."

Pat Thomas, MIS director, Hickory White Furniture Co.



$60 million worth of individual hardware and software products work together.

"It's $15,000 here, $20,000 there" for distributed security and applications management tools, Fowler explains.

"It's not like on the mainframe where you buy the whole environment. What you have to do to get a client/server environment running in real time is a lot," he adds. "You automatically have more responsibility, the kind of responsibility that used to reside with IBM."

Staffing issues

Keeping client/server integration tasks in-house can also be stressful and frustrating for staff. Not only must staff members find products that work in custom environments, they also must do extensive testing to ensure that products work as vendors claim they do — all while keeping user needs and demands in mind.

At Cowen & Co., Whelpley says finding software that would provide TCP/IP support to both clients and servers was a major challenge and a months-long process. "The integration issue really had more to do with finding products that worked," he says. "Despite vendors' claims, we had to do a lot of experimentation."

Ultimately, Cowen opted for Netmanage, Inc.'s Chameleon product, but even that didn't provide all Whelpley had hoped for. The product ended up using more memory than expected.

Users' constant demands for changes add to the pressure already on IS, says Ann Sayler, a project manager at Hughes Space & Communications Co. in El Segundo, Calif.

Sayler is in charge of supporting what's known at Hughes as the Cambridge system, a set of business management applications initially developed by Cambridge Technology Partners, a Cambridge, Mass., consultancy. Rolled out in June 1992, the system has since undergone five subsequent rollouts, "each with a Part 2," Sayler says.

"This has been the most iterative development cycle I've ever seen," she says, explaining that users continually have new ideas for links between data and various applications. "It puts a lot more pressure on the staff."

Unfortunately, that pressure will only increase as Hughes begins integrating the Cambridge system's Sybase database with resource management and product data applications, which use The ASK Group, Inc.'s Ingres and Oracle Corp. databases, respectively. This integration will occur even as the IS staff downsizes from 250 to 150.

Vendor know-how

To ease some of the pressure, Hughes Chief Information Officer Gary Osborne says he intends to leverage the expertise of vendor companies.

The idea is to create "a virtual IT organization with [vendor] companies in our organizational chart," he explains. Oftentimes, vendor staff will report to Hughes personnel on a project team.

In this way, not only does Hughes get savvy vendor staff on an as-needed basis, but those people can provide informal training for Hughes personnel.

Unfortunately, all the trailblazing integration work staffers do makes them particularly attractive to other companies. At the Toronto Stock Exchange, Fowler says his staff of 162 (73 in the development area) already has been raided several times by Canadian brokerage firms, which are now beginning to move to client/server models and are seeking experienced developers. As a result, staff turnover has been as high as 10%, which he considers significant.

"We moved toward Unix sooner than the brokerages, and now they're moving in and buying up programmers," he says. "Other companies are willing to pay a premium for people with two, three and four years of experience."

Fowler says he tries to counter this by keeping his people challenged and doing what he can in terms of salary. "Still, it's a big pressure from a staffing viewpoint," he says.

Despite the unforeseen budget, timing and manpower issues involved, most managers say they would be their own integrators again.

Among this group is Glister. However, "being our own systems integrator has been more work and more pressure than we ever expected." ■

King is a free-lance writer in Ridley Park, Pa.

Business sense

When business unit managers hire information systems experts, they want visionaries who can apply technology to create new opportunities.

■ **DOUG KIDDER,** who oversees consumer distribution at a paint manufacturer, **WANTS** IS professionals who have walked in the users' shoes and can understand the problems of warehousing operations and paint production.

■ **CHUCK WARCZAK,** vice president of finance for a hotel chain, **LOOKS FOR** IS people with experience in hotel systems rather than any particular LAN operating system.

■ **DENNIS TARZIAN,** vice president of a publishing group in a large communications firm, **INSISTS ON** IS staffers who can apply technology to the creation of new electronic market channels.

Business unit managers who hire their own IS staffers want technology experts who are as comfortable in the corporate world as they are in a computer store and who understand that their ability to help attain business goals is often more important than technical finesse.

But are business unit managers actually hiring their own IS professionals to the exteot predicted just s few years ago? Yes and no.

Business managers are biring staffers who are, in a sense, hidden IS workers, notes Rick Swanborg, principal at Ernst & Young's Center for Information Technology and Strategy in Boston. For instance, marketing managers are biring marketing professionals who are computer-literate and who can fulfill their own information needs by building PC databases and ad boc applications.

"I don't know of many business unit managers who are hiring the well-trained IS professional," Swanborg says. "They are hiring people with the same skill sets as IS pros, but not acknowledging it as a [data processing] position."

Reporting remains the same

Colocation — the movement of employees between IS and business units — has never developed beyond the evaluation stage in most companies, says Ted Carrett, manager of consulting services for systems and technology at the Royal Bank of Canadá in Toronto. Although some companies, including his, have physically moved tS divisious within business units for better customer service, Carrett notes that the lines of reporting have remained with IS.

However, according to a multicbent study conducted by the Center for Information Technology and Strategy and tbe Society for Information Management in Chicago, IS professionals have the greatest opportunity to influence their client's business when reporting directly to the business unit's chief executive officer.

Branching out

In these cases, the IS professional takes part in planning and development meetings for the business unit, in addition to providing direct service and support. Frequently called business analysts, these IS staffers must demonstrate an understanding of the business.



Take the case of Valspar Corp.'s Consumer Paints Division in Wheeling, Ill., where Doug Kidder, tbe director of consumer distribution, is also the director of IS. Kidder has two direct IS reports who work side by side with the division's production and warehousing personnel.

"We've all been out there in the user's shoes and that's the blend we'll be looking for," Kidder says. "We really need people who can make computers solve a business need — a real operations-type application — because they understand the problem."

Even at Maynor Care's Hotel Division, which owns and manages a number of Choice Hotels' properties, new IS staffers have to serve a stint al one of tbe company's local properties in the Washington area. Chnck Warczak, vice president of finance, administration and systems, has accepted several transfers from corporate IS based on technical skills and the recommendation of the company's IS chief.

"They were familiar with the system, hut I needed them to become thoroughly familiar witb hotel operations," Warczak says. Futnre staffers may come from outside the company, Warczak adds, and he will look for hotel experience first, PC skills second.

Looking into the future

Beyond business and technical experience, the IS professional must have a vision of how technology can be applied to create new business opportunities or improve existing ones, according to Dennis Tarzian, group vice president and business manager for the Business, Technical and Professional Group of Paramount Publications in New York.

Tarzian, who was a systems analyst 15 years ago, says he wants to hire a chief technology officer for his unit who will be responsible for, "technology planning and evaluation as it relates to re-engineering business practices." More important, the new technology officer will oversee the evaluation of components necessary for electronic publishing.

"You look to hire the best athlete in tbe draft," Tarzian says. "Someone with proven talent, who is successful and has a reputable background, someone who has technology success stories. And if they understand our business, they have a real edge."

Goff is a free-lance writer in New York.

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National Computer Associates

Help desk hires

If you're easily ruffled, forget a job on the help desk. Managers want the type who is laid-back.

By Daniel Lyons

Oddly enough, the best help desk staffers are usually not super techno-weenies, networking gurus or programming wizards. In fact, technical proficiency is not even among the Top 5 most sought-after help desk skills.

Instead, help desk managers say they are more concerned with how a candidate communicates and handles stress. "Customer skills and motivation are more important than technical skills," says David Gregson, manager of the user support group at Ropes & Gray, a large Boston law firm. "You can train people in technology, but you can't teach great customer service."

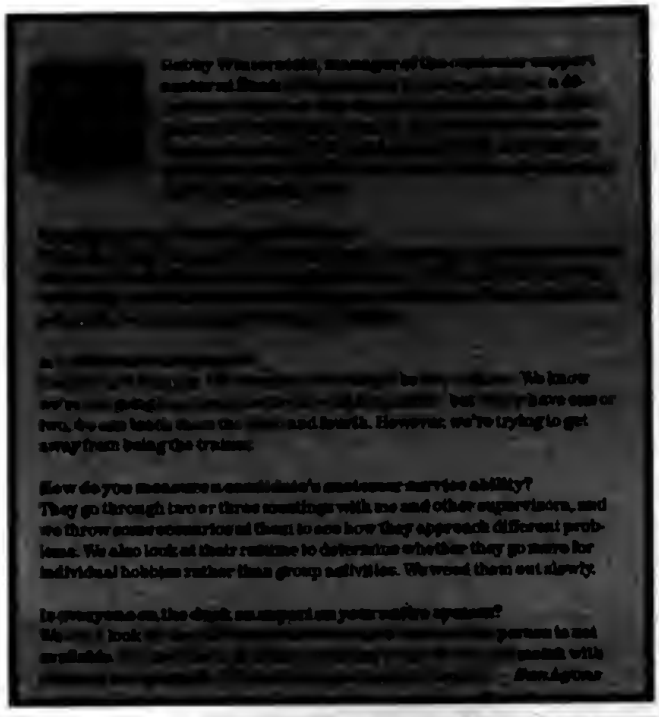
During job interviews, Gregson gives candidates real-life scenarios and asks them to respond. "I look for laid-back, easygoing people. You don't want the loner, and you don't want the coder. You want the bubbly person."

Some of the best help desk staffers come with administrative backgrounds, says Bill Rose, president of the Software Support Professionals Organization, a trade group in San Diego. "They're used to pressure and the support role," he says. He acknowledges, however, that some progressive companies are changing their recruiting styles. Instead of starting with resumes, which offer little information about a candidate's personality, some companies start with a phone interview to gauge interpersonal skills and then accept resumes from candidates who come across well over the phone.

One company that uses this prescreening method is Corporate Software, Inc., a software reseller in Canton, Mass., that also offers outsourced help desk support to corporate customers. "What we're looking for are obvious communication skills," says Margaret Mansfield, a consultant in Corporate Software's support group. The company also gives applicants a brief quiz over the phone to measure their command of basic PC, DOS, Windows and Macintosh know-how.

One of the more difficult skills to find is "the ability to step through a problem logically," Mansfield says. "It's not necessary that a person know the inside of every operating environment. We want people who know they don't know everything but can go through steps to find an answer in a couple of minutes."

Lyons is a free-lance writer in Ann Arbor, Mich.





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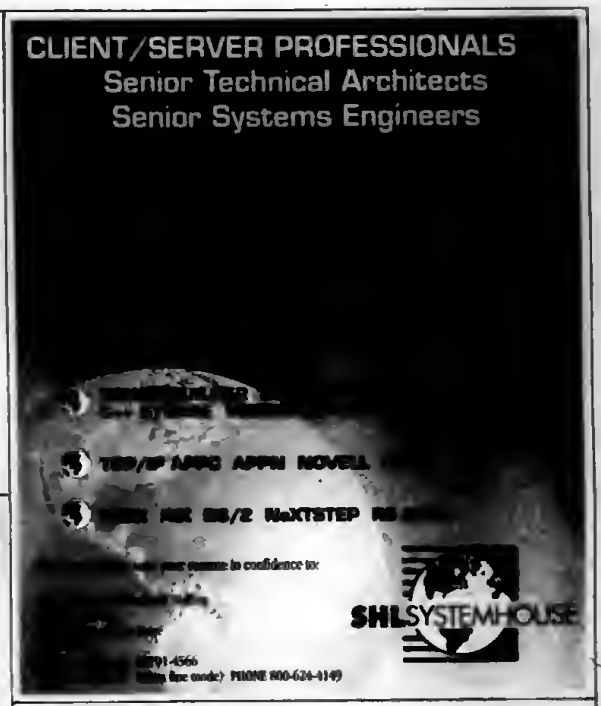
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SOFTWARE ENGINEER (REF #1069068) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs. Inst analyzing, designing, developing & implementing comp systems for clients' EDP sys. Duties incl: analysis, design, development & maintenance of integrated Retail & Bank System. Responsibilities incl processes like new maintenance, tech support & interaction with users & tech support group. Tech support provided will be for design & maintenance of client based apps using DB2, INSTALL/1 using CICS on a IBM 3090 with the following software & tools: MVS/ESA, DB2, INSTALL/1, COBOL II, TSO, FOCUS & IDMS. $44,000/yr. 40 hr/wk.

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SYSTEMS ANALYST (REF #1069790) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs. Inst analyzing, designing, developing & implementing comp systems for clients' EDP sys. Duties incl development, enhancement, customization & implementation of the CHESS (A MRP, Manufacturing, distribution & financial management syst) package. Inst re-design of its modules. Duties incl modifications, customization & sys testing. Duties req using the 4GL PRO-IV & Superlayer on UNIX, VMS & DOS/NOVELL based comp. Need Bachelor's in Computer Science, Engineering, Systems Analysis or its equivalent & 2 years experience in the job offered or 2 years experience as Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 years of college education plus 3 years of experience in the job offered or in the related occupation in lieu of the required education & experience. At least 1 year of the related experience must include developing computer software in PRO-IV. Related experience must also include, in whole or in part, software modification & customization, & using UNIX, VMS & DOS/NOVELL. $40,000/yr. 40 hr/wk.

SOFTWARE ENGINEER (REF #1072283) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs. Inst analyzing, designing, developing & implementing comp systems for clients' EDP sys. Duties incl leading a team of engineers as a client-server based message switching sys project. Duties incl design, development & implementation of multi-processor communication, fault tolerance, telephony, recovery, MMT2 operating sys ® MITRA 225, Duties req using UNIX-SVR3, UNIX, KERNEL, Device Drivers for UNIX X.25 PROTOCOLS, Inter Process communication facilities in UNIX, C-Programming, MOTOROLA MC 68000, INTEL 80286 Assembly Language, MICROSOFT WINDOWS & SQL. Need Bachelor's in Computer Science, Engineering, Systems Analysis or its equivalent & 2 years experience in the job offered or 2 years experience as Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant or R&D Engineer. Will accept 3 years of college education plus 3 years of experience in the job offered or in the related occupation in lieu of the required education & experience. Related experience must have included in whole or in part, design & development of software systems or products including Multi-Processor Communications, Fault Tolerance (Lockstep/Parallel), development or porting of Message Switching Systems; & using UNIX-SVR3, UNIX Kernel, Inter Process Communications; Motorola MC 68000, Intel 80286 Assembly Languages, X.25 Protocols & Microsoft Windows. $42,750/yr. 40 hr/wk.

SENIOR SYSTEMS ANALYST (REF #1069693) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs. Inst analyzing, designing, developing & implementing comp sys for clients' EDP sys. Duties incl design & development of a new product management product. The responsibilities incl design development, process & data flow design, sys/sw development, tech support & design enhancements using the AIX Operating Sys running on the IBM 3090 mainframe & RISC 6000 power parallel sys. The following hrdwre & sftwre languages will be used: IBM 3090 mainframe, IBM PS/2, RISC 6000, Sun-3 series UNIX, C, C++, OOPS (Object Oriented Programming Sys), XWINDOWS, MOTIF & OSF Development Environment (ODE) ® IBM's Austin Development Environment (ADE) product management sys. Need Bachelor's in Computer Science, Engineering, Systems Analysis or its equivalent & 2 years experience in the job offered or 2 years experience as Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 years of college education plus 3 years of experience in the job offered or in the related occupation in lieu of the required education & experience. Related experience must have included, in whole or in part, software development & using UNIX, C, C++, OOPS, XWINDOWS & MOTIF. $60,000/yr. 40 hr/wk.

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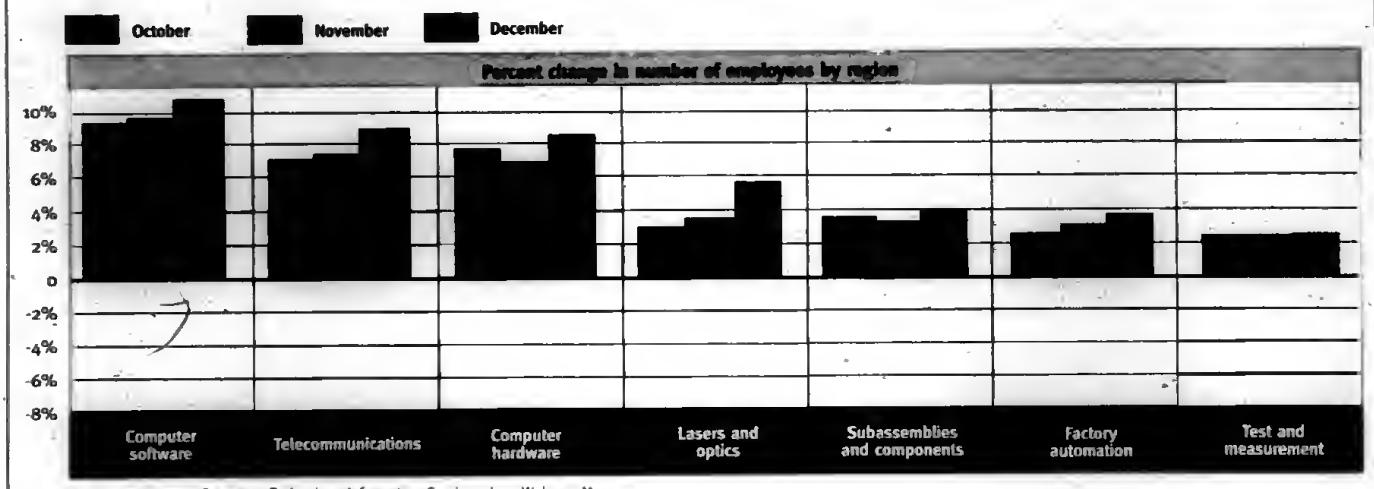
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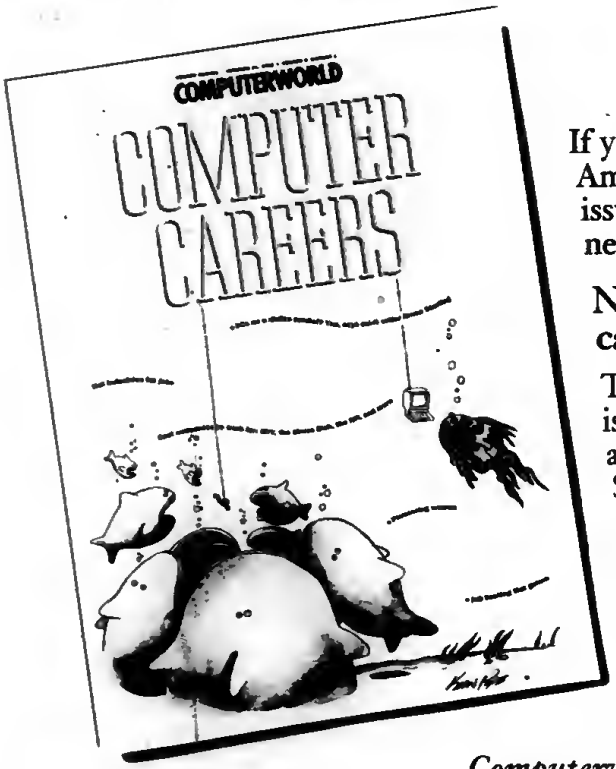
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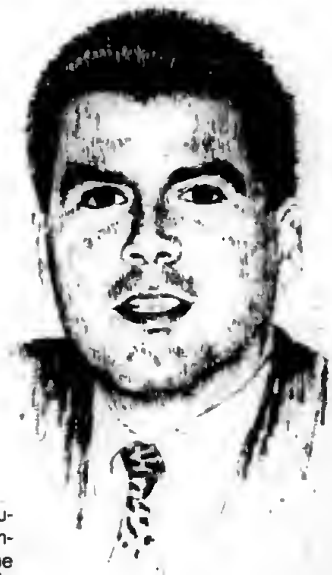
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Planned Editorial Features:
(subject to revision)

- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Information Systems salaries from Computerworld's annual survey with the Association for Systems Management
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- Luis Navarro
Vice President, Sales
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Faneuil Systems of Chicago, formerly known as GIS Information Systems, has been providing outsourcing and remote computing services to a growing base of customers throughout the U.S. for over a decade. Positioning itself as "Your Best Choice for Mainframe Computer Services," this medium-sized provider is unique in that it supports all IBM mainframe architecture operating systems, yet can afford to do business with all sized companies - from the very smallest to those with large international operations. In order to successfully target organizations with specific mainframe requirements, Luis Navarro, Vice President of Sales, advertises in *Computerworld's Marketplace Pages* every week.

"In a broad sense, our target audience includes anyone with a mainframe on the floor. More specifically, Faneuil Systems targets two categories of potential customers: organizations looking to outsource their corporate data centers while transitioning to smaller platforms - and companies needing outside services to drive their mainframe-based applications. In either case, *Computerworld's Marketplace Pages* put us in touch with organizations that have specific mainframe criteria and are a good fit for our environment.

"It's my impression that *Computerworld* is the leading publication within the IS industry. Over the years its readers have come to expect the classified section to contain advertisements from providers of specific IS services - like Faneuil Systems. It's no surprise, then, that we experience a higher rate of closure with leads generated by *Computerworld's Marketplace Pages* than with leads from any other source.

"In our business, with thousands and thousands of data centers out there, the quantity of leads is far less important than the quality of leads. Because we consistently get very qualified prospects, we advertise in *Computerworld's Marketplace Pages* exclusively.

"And *Computerworld's Marketplace Pages* do more than generate high quality leads. It's also where we establish credibility over time by building name recognition and corporate visibility. Here, the credibility of Computerworld goes a long way in establishing our reputation as a solid industry player. This is extremely important, as our customers want to know that we're here today - and will be here in the future as well.

"We're also extremely pleased with the return on our advertising investment in *Computerworld's Marketplace Pages*. Qualified prospects are clearly getting the message about our strong entrepreneurial spirit, high level of service and support for a wide variety of software products, and total flexibility in tailoring mainframe services to individual customer requirements. Until I'm convinced that we can get better results elsewhere, Faneuil Systems will continue running weekly advertisements in the primary classified resource for IS - *Computerworld's Marketplace Pages*."

Computerworld's Marketplace Pages. It's where computer buyers meet computer sellers - every week. Just ask Luis Navarro of Faneuil Systems. To put your classified sales message into the hands of 505,000 influential buyers, call Connie Martin Kearins, Sales Director/Classified Advertising at 800/343-6474.

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Negotiating in pluralistic times

Companies have more options to choose from as products become more interoperable. This works to the buyer's advantage, so make the most of it.

By Julie Hart

Wheeling & dealing

Increased competition is putting the squeeze on the computer industry, but that doesn't mean you automatically get rock-bottom prices and favorable terms. To get what you want, you still need to do some hard bargaining.

"Every [vendor] is negotiable these days, but you have to ask for what you want," says Joe Auer, president of International Computer Negotiations, Inc. in Winter Park, Fla.

Curt Schuyler, systems manager at Union Bank in Los Angeles, always negotiates to get the best deal. "I love to take [vendors] on," says Schuyler, who often rewrites contracts by adding clauses and lining out items. And he never limits his company to a single vendor.

"Because there are more vendors and products out there, there's better competition," Schuyler says. "It's easier to get what you want, but it's a lost cause if you don't negotiate."

Recently, he caught a vendor trying to slip something into a contract. "They wanted to charge us $700 for a single manual," Schuyler says. "I called them on it, and they backed down."

Rather than challenge vendors, many professionals never question pricing or terms, fearing a negative response. In reality, Auer says, deadlocks are key to successful negotiations. Tell vendors from the outset that it's a negotiation, he says, and that you can use other vendors at any time.

"We're up-front about dealing with multiple vendors," says Russell Gill, manager at Ameritech, Inc. in Southfield, Mich. "I don't think that there's a vendor out there [whose products] we don't have. This gives us a lot of leverage."

Let's make a deal

In a recent lease negotiation for eight mainframes, Gill hit a serious roadblock. "We'd been in negotiations for about six months," Gill says. "We wanted some concessions, including the right to do upgrades at a predetermined rate and to get out of the lease early."

The vendor responded by not responding. "We made it clear that we wouldn't deal without these concessions," Gill says. Ameritech then gave the vendor two weeks to have an agreement drawn up or lose the deal. Today, Ameritech has the $100 million deal it wanted.

"I have found that if I tell any vendor what I must have, they always come through," Gill adds. "In the past year, I've probably saved about $10 million on $150 million in purchases."

While asking for what you want is critical, Auer says, some things should be left unsaid. For instance, don't disclose vendor bids to other vendors.

Ramtec, Inc. in Bryan, Ohio, got the deal it wanted by keeping quiet. While negotiating the purchase of workstations, interface cards and other peripherals, cost seemed to be non-negotiable.

Ramtec didn't want to ask about volume discounts because it didn't want to appear desperate and therefore weaken its position. "We figured the vendor would say something like, 'Yeah, if you buy 20 more, you'll get a discount,' " says IS manager Tim Buntain.

Instead, Buntain and his staff looked realistically at their needs to determine the maximum they were willing to purchase. They went back to the vendor to see if it would change its pricing.

"As it turns out, we were within 5% of where we needed to be to get a 15% discount," Buntain says. "We reached the magic number, and we actually got more and paid less. It's worth it to negotiate intelligently with vendors."

Hart is a free-lance writer in San Jose, Calif.

3 PLOYS TO AVOID:

Ploy: Try it, you'll like it.

Situation: The vendor offers you a free trial period of its product without obligation. In some cases, it may be for a small fee.

Reality: Your negotiating position is strongest before the vendor gets the product in the door. It's almost zero after you become dependent on it. If you want to try the product for free, negotiate the ongoing agreement and pricing before you bring it in.

Ploy: You can trust me.

Situation: By using the "three R's" of selling: rapport, rationale and relationship, the vendor persuades the user's staff to rely on oral promises and side letters to document vendor obligations.

Reality: Regardless of personal relationships, if it's not in the contract, it isn't part of the deal. All transactions should be handled on an official basis only.

Ploy: You're getting our best price.

Situation: The vendor tells you that they've quoted their best price from the start.

Reality: You're not ensured the lowest price unless the vendor is willing to back it up in writing, promising that they are selling their system for the maximum allowable discount, which gives you the minimum total price. If they refuse, you know they weren't telling the truth.

Source: International Computer Negotiations, Inc., Winter Park, Fla.

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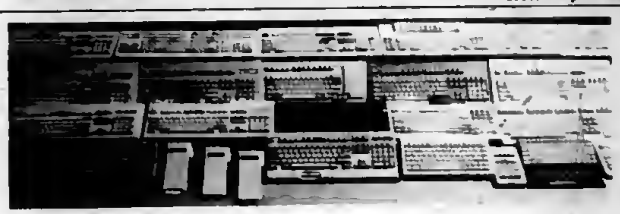
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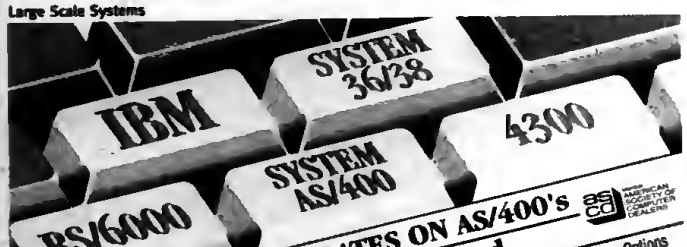
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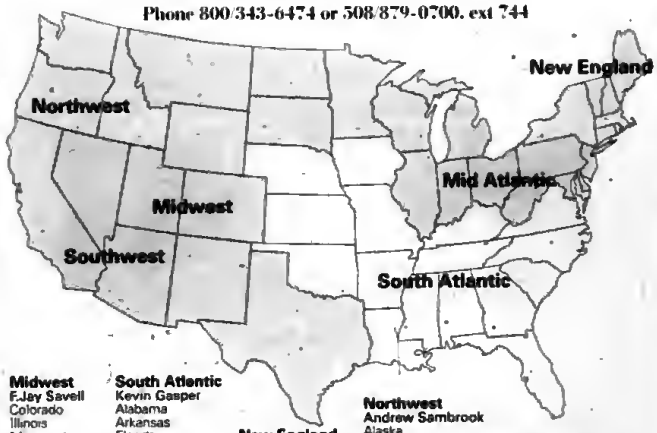
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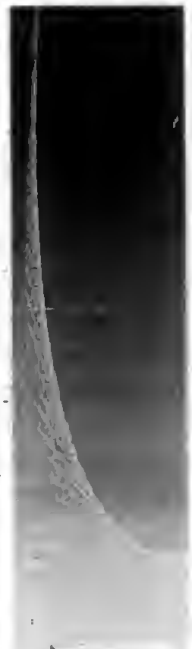
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RFP 2543 due Tuesday, February 15, 1994 @ 3:30 P.M. for the acquisition of a UNIX-based RISC system to establish an INTERNET Mail Server for the State Computer Center of the Central Data Processing Authority. No charge.

RFP 2544 due Tuesday, February 15, 1994 @ 3:30 P.M. for the acquisition of an async dial-up server to front-end a Hydra protocol converter for the state computer center of the Central Data Processing Authority. No Charge.

RFP 2545 due Wednesday, February 16, 1994 @ 3:30 P.M. for the acquisition of software to assist in structural design of bridges for the Mississippi Department of Transportation. No Charge.

RFP 2546 due Monday, February 28, 1994 @ 3:30 P.M. for the acquisition of an optical imaging system to fully support the document processing capabilities of the corporations Divison of the Mississippi Secretary of State. No charge.

For RFP's with a charge, a written request accompanied by either a corporate check on a MS. bank, a POSTAL MONEY ORDER or a certified check made out to COPA/no phone requests accepted. No cash or out-of-state checks. For No charge RFP's, call Linda Watkins 601-359-2604. COPA reserves the right to reject any/all bids and to waive informalities.

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Sealed Bids will be received by Kent County Recorder of Deeds Office, County Administration Building, 414 Federal Street, Dover, DE 19901 for the following:

For the implementation of a Recorder of Deeds imaging System solution, Cash Management solution and indexing solution to be operated from the County's Recorder of Deeds Office. Sealed proposals must be received no later than 4:00 p.m. on February 28th, 1994. There will be a pre-bid conference and tour of the facility in February 1st, 1994. Only pre-bid conference attendees will be allowed to bid.

Specifications for Bid may be obtained by submitting a written request to the Recorder of Deeds from Kent County. No Phone requests. Faxes will be accepted at the following number: 302/736-2279
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Sealed bids will be received in the Office of The Director of Procurement and Contracts, Mississippi State University, Post Office Box 5307, Mississippi State, MS 39762, for the purchase of the following Bid No To Open Tuesday February 1, 1994 - 2:00 P.M.

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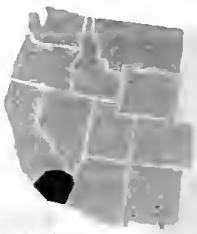
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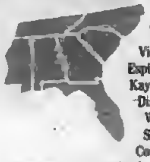
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PaineWebber, Inc 4
Parallax 76
Paramount Publications 111
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Platioum Technology, Inc 30
Policy Management Systems Corp. 73
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PRC, Inc 26
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The Trane Co. 70
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Gainers

Percent

Compression Labs Inc.	24.7
Sequoia Systems Inc	18.8
Cisgva Computer	18.2
Western Digital Corp.(H)	16.1
Cognitronics Corp.	14.5
BMC Software Inc.	13.7
Fluke Corp.	13.4
Motorola Inc.	12.5

Dollar

Motorola Inc.	11.13
BMC Software Inc.	7.25
Texas Instruments	6.25
Cabletron Systems(H)	5.63
Micron Technology	5.50
Hewlett Packard Co.	5.50
Intel Corp	5.33
Newbridge Networks Corp.	5.11

Losers

Percent

Platinum Software	-22.9
Cambex Corp.	-18.2
Ask Computer Systems	-17.5
Octel Communications Corp.	-13.3
Telxon Corp.	-11.9
Spinnaker Software	-11.8
Progress Software Corp.	-11.7
General Datacomm Inds.	-11.9

Dollar

Progress Software Corp.	-5.50
Platinum Software	-5.13
Octel Communications Corp.	-3.75
Ask Computer Systems	-2.13
Banctec Inc.	-1.88
Parametric Technology	-1.75
CrossComm	-1.63
Sequent Computer Sys	-1.63

SEMICONDUCTOR STOCKS REACTED TO A FAVORABLE BOOK-TO-BILL RATIO REPORT FOR DECEMBER. ON THE DOWNSIDE, SEQUENT COMPUTER SYSTEMS, INC. PREVIEWED LOWER EARNINGS AND AN UPCOMING RESTRUCTURING CHARGE (SEE STORY ON PAGE 30)

Fourth-quarter IPOs down

The flow of initial public offerings (IPO) in the computer industry declined slightly in the fourth quarter of 1993, according to information from Securities Data Co. in Newark, N.J.

Thirteen deals netted roughly $480 million, down slightly from 17 offerings and $560 million in the third quarter. The totals were also lower than the fourth quarter of 1992, when 15 IPOs pulled in $550 million. (The totals include only those offerings worth at least $10 million.)

Charles Ronson, a money manager at Balestra Capital in New York, said technology companies had to fight to capture investors' notice, particularly in December. "You had a lot of offerings shouting for attention, and unless the technology idea was very compelling, maybe it got lost in the shuffle," Ronson said.

For the year, there were 55 information technology IPOs valued at more than $10 million; **Gateway 2000, Inc.** (GATE), a South Dakota-based PC direct marketer, ranked as the largest of these offerings at $130 million, followed by **FTP Software, Inc.** (FTPS) at $95 million and **MDL Information Systems** (MDLI) at $90 million.

—Derek Slater

Fourth-quarter IPOs

Company name	1993 IPO	Share price	Amount raised
[illegible]	[illegible]	$7.00	$5.6M
Mercury Interactive	Oct. 29	$13.00	$35.8M
[illegible]	[illegible]	$6.00	$30.0M
Cognitive Systems	Nov. 9	$7.00	$17.5M
[illegible]	[illegible]	$12.00	$23.0M
[illegible]	Nov. 16	$19.00	$95.0M
[illegible]	[illegible]	$21.00	$30.3M
[illegible]	Dec. 7	$15.00	$130.8M
[illegible]	[illegible]	$16.00	$18.0M
Datalink	Dec. 10	$14.00	$22.4M
[illegible]	[illegible]	$7.00	$10.0M
[illegible]	[illegible]	$12.00	$10.8M
[illegible]	Dec. 13	$12.00	$27.0M
[illegible]	[illegible]	$16.00	$40.0M
[illegible]	[illegible]	$12.00	$10.8M
[illegible]	Dec. 16	$5.00	$7.5M
[illegible]	[illegible]	$7.00	$10.0M

Source: Securities Data Co.

Exch	52-Week High	52-Week Low	Name	Jan. 19 3 Pm	Wk Net Change	Wk Pct Change
Communications and Network Services						UP 1.48%
OTC	50 63	19 63	3 COM Corp. (H)	50 50	0 63	1.3
NYS	91 13	71 00	AMERITECH Corp.	75 38	1 50	2.0
NYS	65 06	51 63	AT&T	54 75	0 13	0.2
OTC	4 44	1 72	Aptel Communication Corp.	3 63	0 19	5.6
OTC	26 50	12 50	Banyan Systems Inc.	18 50	-0 25	-1.7
NYS	69 13	50 75	Bell Atlantic Corp	55 69	-0 25	-0.4
NYS	63 88	50 63	BellSouth Corp	57 00	1 38	2.5
NYS	15 50	4 25	Dibert, Bradner & Newman (H)	10 63	0 88	6.4
OTC	10 50	9 50	Broadcast Technology	14 75	-0 50	-3.1
NYS	121 00	74 50	Cabletron Systems (H)	120 38	5 63	4.9
OTC	36 50	11 25	CertiCom Communications	35 50	1 50	4.6
OTC	55 50	26 50	Chipcom Corp.	54 25	4 50	9.0
OTC	69 50	38 50	Cisco Systems Inc. (H)	88 25	3 13	4.7
OTC	18 38	9 00	Compression Labs Inc.	15 13	3 00	24.7
OTC	36 00	20 00	CrossComm	22 25	-1 63	-6.7
OTC	4 63	1 50	Data Switch Corp	2 25	0 13	5.9
OTC	11 25	3 31	Digital Systems Int'l Inc.	3 75	0 00	0.0
OTC	73 13	20 88	DSC Communications	69 25	3 00	4.5
OTC	9 50	4 00	Fibronics Int'l Inc. (L)	4 88	0 25	5.4
OTC	4 38	2 13	Gandalf Technologies Inc.	2 50	0 13	4.8
OTC	2 06	0 69	Gateway Communications	0 94	0 00	0.0
NYS	15 75	7 13	General Datacomm Inds.	8 88	-1 13	-11.3
ASE	3 50	2 00	Go Video	2 63	-0 31	-10.7
NYS	39 88	33 25	GTE Corp (L)	34 63	0 00	0.0
NYS	94 88	70 75	ITT Corp	92 75	2 38	2.6
OTC	29 88	18 81	MCI Communications Corp	26 38	-1 38	-5.0
OTC	5 88	1 50	Microcom Inc.	5 25	-0 25	-4.5
OTC	24 25	3 50	Netrix Corp	5 13	0 11	2.5
OTC	19 00	6 25	Network Computing Devices	7 25	-0 75	-9.4
NYS	11 50	5 38	Network Equipment Tech.	8 38	0 63	7.1
OTC	20 13	8 00	Network General	17 50	0 13	-0.2
OTC	12 63	6 88	Network Systems Corp.	8 63	-0 38	-4.2
OTC	73 88	20 19	Newbridge Networks Corp.	67 25	5 11	8.2
NYS	46 00	21 38	Northern Telecom Ltd.	32 50	-0 13	-0.4
OTC	35 25	17 00	Novell Inc.	27 88	1 38	4.6
NYS	48 88	30 50	Nynex Corp (L)	40 00	0 50	1.3
OTC	24 50	19 00	Octel Communications Corp	24 50	0 75	13.3
OTC	6 50	3 75	Pesaro Data Comm Networks	5 50	-0 38	-6.4
OTC	30 50	14 50	Picture Tel Corp	17 25	0 00	0.0
OTC	11 50	3 63	Proteon Inc.	8 63	0 38	6.0
NYS	38 88	17 75	Scientific Atlanta Inc	35 25	0 63	1.8
NYS	47 00	34 19	Southwestern Bell Corp.	38 88	-0 13	-0.3
NYS	40 31	26 25	Sprint Corp	35 63	2 25	6.4
OTC	26 75	12 50	Standard Microsystems Corp.	22 63	1 50	7.1
OTC	19 75	10 25	Stratacom Inc.	16 50	0 25	1.5
OTC	42 75	20 00	Synoptics Communications	31 00	0 25	0.8
OTC	9 88	2 88	Telxon Corp	6 94	0 94	-11.9
OTC	35 25	17 00	US Robotics	34 88	2 38	7.3
NYS	50 75	42 88	US West Inc	42 63	-1 25	-2.8
OTC	70 75	29 50	Wellfleet Communications (H)	70 25	2 25	3.3
OTC	19 75	7 25	Xircom	19 75	1 00	5.3
PCs and Workstations						UP 1.57%
OTC	5 56	2 50	Advanced Logic Research	4 00	0 38	10.3
OTC	82 00	22 00	Apple Computer Inc.	31 38	-0 50	-1.6
OTC	36 00	13 75	AST Research Inc.	16 00	2 50	10.6
NYS	7 06	2 50	Commodore Int'l	3 38	-0 25	-6.9
NYS	79 00	41 75	Compaq Computer Corp (H)	79 00	2 13	2.8
OTC	89 88	13 50	Dell Computer Corp	25 13	-0 13	-0.5
NYS	89 25	58 88	Hewlett-Packard Co.	86 88	5 50	6.8
NYS	24 75	13 75	Silicon Graphics	23 38	-0 11	-0.5
OTC	41 00	21 13	Sun Microsystems Inc.	30 00	0 75	2.6
NYS	50 75	24 63	Tandy Corp	44 63	-1 38	3.0
OTC	7 00	2 50	Zeos International Ltd	3 63	-0 13	-3.5
Large Systems						UP 2.20%
ASE	8 50	0 38	Amdahl Corp	6 38	-0 50	-7.3
NYS	8 50	5 63	Convex Computer	6 50	1 00	18.2
OTC	5 13	1 09	Cray Computer	2 50	-0 25	-9.1
NYS	30 88	20 38	Cray Research Inc.	27 13	0 63	2.4
NYS	13 88	7 75	Data General Corp	9 50	-0 25	-2.6
NYS	69 25	54 13	Digital Equipment Corp.	37 13	0 38	1.0
NYS	47 38	13 69	Harris Corp	46 25	1 25	2.8
NYS	60 00	40 63	IBM (H)	58 88	0 63	1.3
OTC	25 75	5 25	Kendall Square Research	6 63	0 00	0.0
NYS	127 00	87 25	Matsushita Electronics	1 62 50	4 75	3.5
OTC	23 75	12 75	NetFrame	16 25	-0 75	-4.4
OTC	26 00	9 25	Parallan Computer	12 75	1 25	10.9
OTC	23 25	11 25	Pyramid Technology	16 25	1 50	10.2
OTC	24 00	11 25	Sequent Computer Sys.	14 25	-1 63	10.2
OTC	6 00	1 63	Sequoia Systems Inc.	4 75	0 75	18.8
NYS	41 25	10 25	Stratus Computer Inc.	31 63	0 00	2.8
NYS	16 50	8 50	Tandem Computers Inc	11 75	0 38	3.3
OTC	30 00	10 63	TriCord Systems	22 00	-0 75	-3.3
NYS	43 88	9 88	Unisys Corp	15 13	0 50	4.0
Software						UP 0.58%
OTC	37 00	14 25	Adobe Systems Inc.	26 13	-0 38	1.4
OTC	27 50	13 50	Aldus Corp	26 25	1 25	5.0
OTC	8 88	5 11	American Software Inc	5 25	-0 65	-9.8
OTC	20 13	9 50	Ask Computer Systems	10 00	-2 13	-17.5
OTC	56 75	17 00	Autodesk Inc.	44 25	-1 25	-2.7
OTC	5 25	2 38	Bachman Info Systems	3 38	0 38	12.5
OTC	41 00	24 00	BGS Systems Inc.	28 00	-0 25	-0.9
OTC	82 00	38 75	BMC Software Inc.	60 25	7 25	13.7
OTC	28 25	18 38	Borland & Baggage	25 25	1 75	7.4
OTC	27 25	12 75	Borland Int'l Inc.	15 75	0 50	3.3
OTC	4 88	2 75	CE Software	3 19	-0 06	-1.9
ASE	40 25	16 41	Cheyenne Software Inc.	29 38	0 50	1.7
OTC	11 13	6 00	Cognos Inc	10 88	0 38	3.6
NYS	44 50	20 38	Computer Associates (H)	41 88	1 50	3.5
OTC	6 50	2 13	Computervision Corp	3 88	0 00	0.0
OTC	34 25	19 25	Compuware Corp	27 88	2 88	11.5
OTC	11 75	5 75	Comshare Inc.	10 50	0 00	0.0
OTC	22 00	5 38	Corel Corp (H)	30 88	0 50	2.5
OTC	14 50	3 38	Easel Corp.	4 25	-0 50	-10.5
OTC	23 25	8 75	Filenet Corp	21 25	2 75	13.4
OTC	25 25	15 75	4th Dimension	23 00	1 50	7.0
OTC	19 25	5 25	Frame Technology	10 88	0 88	8.8
OTC	17 00	7 00	Group I Software	9 25	-0 50	-5.1
OTC	55 25	15 50	Gupta	18 75	-0 50	2.8
OTC	12 00	6 13	Hogan Systems Inc.	9 50	0 50	5.6
OTC	29 75	11 25	IMRS	26 38	0 13	0.5
OTC	44 75	27 00	Information Resources	36 88	0 00	0.0
OTC	27 25	13 38	Informix Corp	17 38	-1 25	-7.3
OTC	13 25	8 50	Intergraph Corp	10 75	0 50	4.9
OTC	13 63	4 88	Interleaf Inc.	7 13	0 13	1.8
OTC	15 00	4 75	Intersolv Inc	11 50	-1 00	-8.0
OTC	18 71	7 75	Knowledgeware Inc.	15 13	-0 75	-4.7

Exch	52-Week High	52-Week Low	Name	Jan. 14 3 Pm	Wk Net Change	Wk Pct Change
OTC	34 75	15 50	Legent Corp.	27 38	0 13	0.5
OTC	61 38	19 75	Lotus Development (H)	56 25	0 75	1.3
OTC	23 00	4 25	Mathsoft	6 50	-0 50	7.1
OTC	20 25	6 50	McAfee Associates	8 25	0 25	3.1
OTC	15 50	7 00	Mentor Graphics	13 75	-0 25	-1.9
OTC	46 00	13 13	Micro Focus	11 88	0 50	11
OTC	13 25	4 38	Microgenesis	9 88	0 75	8.2
OTC	98 00	76 38	Microsoft Corp	85 50	2 25	2.7
OTC	17 75	13 31	Oracle Corp	13 13	1 00	3.1
OTC	44 25	22 50	Parametric Technology	37 25	-1 25	-3.4
OTC	40 50	23 50	Peoplesoft	34 00	1 88	5.8
OTC	7 11	5 50	Phoenix Technologies	6 63	0 44	10.4
OTC	45 25	22 00	Powersoft	42 75	2 88	7.2
OTC	39 75	13 50	Platinum Software	17 25	-5 13	-22.9
OTC	25 00	7 25	Platinum Technology	15 13	-0 13	-1.3
OTC	60 25	32 25	Progress Software Corp	43 63	-5 50	-11.7
OTC	4 50	1 94	Quarterdeck Office Sys.	2 56	-0 01	-1.2
OTC	52 00	16 00	Rainbow Technologies Inc.	20 50	1 25	6.5
OTC	11 38	4 25	Rasterops	7 00	-0 38	-5.1
OTC	15 25	5 75	Roos Systems	6 75	0 25	3.8
OTC	28 75	17 50	Sapiens Int'l Corp. N V	25 75	1 38	7.4
OTC	14 50	5 50	Software Publishing Corp	7 63	-0 25	-3.2
OTC	17 25	6 38	Software Toolworks Inc	9 75	-0 61	-6.0
OTC	2 88	0 25	Spinnaker Software	1 88	-0 25	-12.8
OTC	13 75	6 25	State of the Art	7 25	0 25	3.6
NYS	33 63	17 63	Sterling Software Inc.	33 50	5 00	0.0
OTC	21 63	11 50	Struct Dynamics Research	13 50	0 00	0.0
OTC	47 11	21 88	Sybase Inc. (H)	45 75	1 25	2.8
OTC	20 50	9 25	Symantec Corp	15 63	-0 38	-2.5
OTC	24 25	10 00	System Software Assoc.	14 38	-0 25	-1.7
OTC	6 50	2 00	Telxon Corp	6 25	0 31	5.5
OTC	26 50	13 50	Verbatim Systems	22 38	1 38	6.5
OTC	16 50	5 50	Walker Interactive Systems	11 25	0 50	3.3
OTC	3 19	0 84	Wordstar	1 25	-0 13	-9.1
Semiconductors						UP 0.46%
NYS	32 88	16 75	Advanced Micro Devices (L)	16 50	1 50	8.8
NYS	28 00	15 50	Analog Devices Inc	25 50	0 88	3.6
OTC	38 63	15 50	Atmel Corp	36 75	0 00	0.0
OTC	6 88	2 75	Chips and Technologies	6 88	0 00	0.0
OTC	61 50	15 00	Cirrus Logic (H)	60 75	2 38	4.1
NYS	18 75	9 38	Cypress Semiconductor Corp	15 00	0 00	6.2
NYS	19 00	11 75	Dallas Semiconductor	17 75	1 88	11.8
OTC	74 50	42 75	Intel Corp	68 50	5 38	9.1
NYS	19 25	10 25	LSI Logic Corp	17 00	1 75	10.9
OTC	26 75	12 25	Lattice Semiconductor	17 00	1 13	7.1
NYS	63 63	19 25	Micron Technology	56 00	5 50	10.9
NYS	507 50	48 75	Motorola Inc.	118 88	11 13	10.3
NYS	21 75	10 13	National Semiconductor	18 75	1 50	8.7
NYS	14 50	8 50	Sanyo Semiconductor	9 38	-0 38	-4.0
OTC	52 75	25 75	SynOptics	46 25	0 75	1.6
NYS	84 25	50 50	Texas Instruments	73 25	6 25	9.3
OTC	18 88	6 50	VLSI Technology	12 25	1 25	11.4
OTC	14 38	5 38	Weitek	8 88	-0 13	-1.4
ASE	12 63	3 63	Western Digital Corp. (H)	12 63	1 75	16.1
OTC	54 50	26 75	Xilinx	49 88	2 75	5.8
OTC	40 75	19 00	Zilog Inc	36 13	2 13	6.6
Peripherals and Subsystems						UP 0.21%
OTC	24 75	10 50	American Power Conversion	22 75	0 50	2.2
OTC	24 25	15 50	Banctec Inc.	25 50	-1 88	-8.0
OTC	14 75	3 50	Cambex Corp	6 50	1 00	18.2
ASE	18 38	5 88	Cognitronics Corp	5 00	0 63	14.5
NYS	25 50	9 00	Conner Peripherals	15 75	0 13	0.8
OTC	38 50	17 50	Creative Technologies Inc.	26 75	1 88	4.3
OTC	16 75	5 50	Data Race Inc.	9 38	0 63	6.7
ASE	32 13	7 50	Datapoint Corp.	8 13	-0 50	-5.8
NYS	20 00	5 13	EMC Corp	20 00	1 63	8.9
OTC	9 25	5 25	Emulex Corp.	6 88	0 25	3.8
OTC	20 00	14 00	Evans & Sutherland	19 50	0 75	4.0
OTC	19 88	7 50	Exabyte (H)	18 88	1 00	5.3
OTC	34 00	17 50	Intelligent Info. Systems	21 75	-3 25	-13.0
OTC	7 25	2 38	Immagic Corp	2 88	-0 13	-4.2
OTC	10 50	8 75	IPL Systems Inc.	8 63	-0 13	1.4
OTC	24 00	13 75	Kodak Inc	16 25	-0 75	-4.4
OTC	12 11	4 38	Maxtor Corp	5 75	-0 38	-6.1
OTC	9 88	5 75	Microboards Corp	6 63	0 13	1.9
NYS	137 00	91 25	3M Corp.	130 00	2 75	2.1
OTC	9 50	6 25	Printronix Inc. (H)	8 50	-0 25	2.9
NYS	17 25	7 50	QMS Inc.	9 38	-0 38	-3.8
OTC	17 88	9 38	Quantum Corp	16 25	0 25	1.6
OTC	9 13	3 13	Radius Inc.	7 94	0 13	1.6
NYS	27 75	13 75	Recognition Equipment	14 13	0 75	5.6
OTC	8 25	3 63	Reson Inc.	5 63	-0 13	-2.2
OTC	20 00	13 13	Seagate Technology (H)	24 00	1 63	6.3
NYS	43 00	28 00	Storage Technology	31 63	2 75	6.9
NYS	27 88	21 38	Tektronix Inc.	25 38	0 38	1.5
NYS	93 00	69 00	Xerox Corp. (H)	91 00	0 88	1.0
Services						UP 0.29%
NYS	4 38	1 75	Allegron Inc.	1 88	0 13	7.1
OTC	29 75	14 88	American Mgmt Systems	19 00	0 25	1.3
NYS	4 63	2 38	Analogic Inc.	3 88	0 00	0.0
OTC	23 88	15 75	Analysts Int'l	17 00	-1 00	-5.6
NYS	56 88	46 88	Auto Data Processing	53 38	0 13	0.2
NYS	20 13	15 00	Ceridian Corp (H)	20 13	0 75	3.9
NYS	21 25	13 13	Comdisco Inc.	21 25	1 13	5.6
OTC	13 38	6 14	Computer Horizons	12 38	0 38	3.1
NYS	53 50	23 38	Computer Sciences	33 13	0 62	1.5
NYS	9 00	6 00	Computer Task Group	6 88	-0 13	-1.8
NYS	35 75	17 75	CompUSA Inc.	17 75	-0 63	3.4
OTC	14 13	8 75	Control Data Systems Inc.	9 00	-0 61	-6.3
OTC	16 00	7 00	Corporate Software	14 50	0 00	0.0
OTC	11 00	6 63	Egghead Discount Software	8 88	-0 38	-4.1
NYS	35 88	26 00	General Motors E (EDS)	29 25	0 50	1.7
OTC	25 50	13 75	Inacom Corp.	14 25	-0 75	-5.0
OTC	28 00	12 00	Intelligent Electronics	25 88	0 13	0.5
OTC	19 00	9 75	Mercisi (H)	18 75	0 13	0.7
OTC	38 50	7 00	Micrografx Inc.	27 50	-0 67	-2.4
OTC	38 50	25 00	Policy Management Sys.	37 75	0 25	0.7
NYS	87 25	23 63	Policy Management Sys.	52 00	2 63	5.3
NYS	45 88	25 50	Reynolds and Reynolds	42 38	-0 88	2.0
OTC	28 50	13 38	SEI Corp. (H)	27 00	0 00	0.0
OTC	26 00	17 50	Shared Medical Systems	25 13	1 25	5.2
OTC	12 63	6 38	Shl Systemhouse	7 25	-0 13	-1.7
OTC	30 75	20 00	Software Spectrum Inc.	22 50	-0 25	-1.1
OTC	82 75	16 00	Sungard Data Systems	57 75	-0 75	-1.9

KEY: (H) = NEW ANNUAL HIGH REACHED IN PERIOD (L) = NEW ANNUAL LOW REACHED IN PERIOD

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Microsoft's Windows calculator doesn't always have the right answer. For example, it reportedly calculates something as simple as "750.35 - 750.30" incorrectly due to its use of floating-point approximations. Problems with the program have opened up a whole new industry – replacement programs for the default Windows calculator.

Watch Out!

for these new viruses in '94

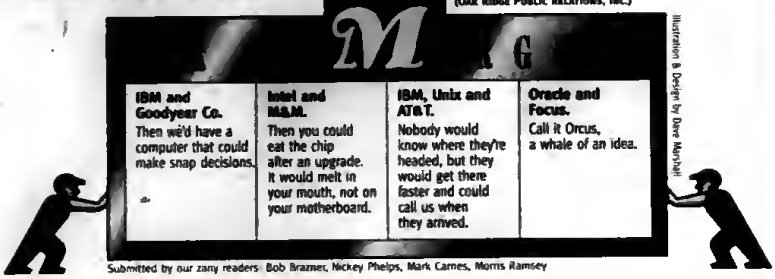
Ross Perot virus:
Activates every component in your system just before the whole thing quits.

Ted Turner virus:
Colorizes your monochrome monitor.

Jimmy Hoffa virus:
Nobody can find it.

Star Trek virus:
Invades your system in a place where no virus has gone before.

Source: High Tech Joke Book (Oak Ridge Public Relations, Inc.)



Submitted by our zany readers: Bob Brazner, Nickey Phelps, Mark Carnes, Morris Ramsey

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The 5th Wave *by* Rich Tennant



Inside Lines

The Provo/Chicago line

Novell is aiming a number of development efforts at Chicago, Microsoft's upcoming Windows release, the company told analysts last week. Novell's AppWare Foundation client application development environment, for example, will run on Chicago when the latter arrives, says Novell honcho Richard King. Novell also plans a NetWare requestor for Chicago and sees it as a higher priority than the Windows NT requestor, which is now due out in May, three months later than expected. Chicago is also a likely first candidate for a 32-bit version of Novell's Virtual Loadable Module.

Running hot and cold

Compaq is preparing for a busy first half-year, with major product launches in servers, desktops and notebooks, sources said. Among the more interesting is a combination announcement with Microsoft, where Daytona (Windows NT 3.1) meets Anchorage (a specially tweaked ProLiant server). This is due out in March. Compaq also is readying four new Contura notebooks, code-named Shadow. One is the oft-reported, oft-delayed subnotebook, and the other three are full-size models that have PCMCIA and SL enhanced chips. Two have local-bus graphics.

Serving up the goods

Dell is preparing a big-time push into the server market, according to Martin Seyer, the company's director of advanced server marketing. Dell will release a follow-on to its XE 4000 server later this month. The new box will be Pentium-optimized and will feature improved performance and disk I/O, better reliability (new monitoring tools and systems diagnostics) and new approaches to thermal management. Dell is also expected to enter the multiprocessor market later this year.

Word gets around

Microsoft will ship early next month a patch that fixes "all known" General Protection faults in Word for Windows 6.0, a company spokeswoman confirmed. Soon after Word for Windows 6.0 shipped late last year, reports surfaced of users experiencing serious problems with the product, including unexplained behaviors and crashes.

Beat the clock

Microsoft, meanwhile, has finally signed on to use Digital's software license management technology in its operating systems and applications, a deal Digital originally hoped to have in hand last June. Digital executives mentioned the agreement last week while briefing analysts on a planned Feb. 8 megaintroduction, but sources said it might be announced before then.

Spanning the globe

BT is close to signing a deal with Oracle for the latter to build interactive, multimedia applications. The pending deal is similiar to the one that the Redwood Shores, Calif., company recently signed with Bell Atlantic (see story page 8), a source close to the UK-based phone carrier said. No contracts have been inked, but key pieces of Oracle software needed to power interactive systems — Media Server and Media Objects — are behind BT pilots in the London area, Oracle Chairman James Abrahamson acknowledged.

Private donations from Silicon Valley are keeping the Search for Extraterrestrial Intelligence (SETI) in business. SETI, a nonprofit project based in Mountain View, Calif., nearly went hurtling into a black hole when Congress cut off its NASA funding in October. But $4.4 million was raised from such high-tech leading lights as David Packard, Bill Hewlett, Paul Allen and Gordon Moore, SETI said last week. The money will pay SETI's 70 staffers for a year and start extraterrestrial "listening" from Australia and Puerto Rico. We like to listen too. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.



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